

RULES FOR ASSIGNING OXIDATION STATES

Chemists use the following ordered rules to assign an *oxidation state* to each element in a compound.

1. Any pure element has an oxidation state of **zero**.
2. The sum of the oxidation states of all atoms forming a molecule or ion is the **net charge** of that species.
3. In their compounds, group-1 metals have an oxidation state of **+1**
In their compounds, group-2 metals have an oxidation state of **+2**
4. In its compounds, fluorine always has an oxidation state of **-1**
5. In their compounds, hydrogen atoms have an oxidation state of **+1**, except when combined with group-1 or group-2 metals.
6. In its compounds, oxygen atoms normally have an oxidation state of **-2**, except in compounds in which O is bonded to O (peroxides)
7. In binary compounds with metals,
 - group 17 elements have oxidation state **-1**
 - group 16 elements have oxidation state **-2**
 - group 15 elements have oxidation state **-3**

Note: When two or more of the above rules are in conflict, the one higher in the list 'wins'.