

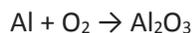
## Answer on Question #53503 – Chemistry – General chemistry

### Question:

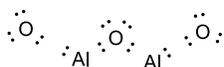
what is meant by covalency ? explain by giving example  
what is the difference between covalency and oxidation state.

### Answer:

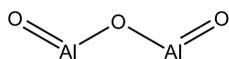
Upon interaction Al and O<sub>2</sub> Al<sub>2</sub>O<sub>3</sub> is formed:



It occurs so because Aluminium and oxygen have 3 and 2 valence electrons, respectively. Appearance of bonds between Al and O includes formation of shared pair of electrons which are built using by 1 electron from each element. Covalency is the number of these pairs (chemical bonds). In figure they can be shown as two dots (Lewis structure) or lines:



Lewis Structure



As depicted in the figure each Al and Oxygen are surrounded by three and two lines, respectively. It means that Al has covalency of 3, and oxygen one is of 2.

Oxidation state is the number of shared electron pairs which are shifted to one of the atom due to the difference in electronegativities. This case each Al has given 3 electrons to Oxygens, so it has oxidation state of +3, and each oxygen has taken 2 electrons, thus its oxidation state becomes -2. Sometimes oxidation state equals to covalency, however, in many cases it is not so. For example, Nitrogen in N<sub>2</sub> has the oxidation state of 0, but the covalency is of 3:

