

Moles

In order to establish a means of talking about how much chemical is being used, the concept of moles was developed. The science concept of moles was developed to facilitate ease when talking to other scientists about the number of atoms that were involved in any reaction. The number of atoms in one mole of some chemical substance is 6.02×10^{23} . This constant is named after a scientist named Avogadro.

In a chemical reaction when the elemental symbol or group of symbols is written and there is no number to the immediate left of the symbol, the number of moles of that substance is assumed one. Due to the law of conservation of mass, the number of elements on one side of the chemical equation must be equal to the number on the other side of the chemical reaction. If the number of moles of one substance is different in a chemical reaction then the equation for it has not been balanced and needs to be. To balance a chemical equation increase the number of moles of some substance by writing a number to the immediate left of the symbol. A two next to some substance means that two moles of the substance are present in the reaction. Keep changing the numbers in front of the chemical substances (called coefficients) until the number on the left (reactant side) is the same as it is on the right side of the equation (product side).

It is important in alternative energy to understand the concept of moles because in a chemical reaction when energy is produced the amount of energy generated is determined. In an exothermic reaction it is necessary to know how much reactant is used and how much corresponding energy is produced. In the nuclear reaction when the concept of moles is understood the amounts of waste and energy generated can be compared. The amount of silicon that is used to make solar cells can be compared to the energy generated through active solar power. The idea of being able to compare the amount of one substance to another is the basic desire that is fulfilled when moles are used.

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