

# MILANCO INDUSTRIAL CHEMICALS

## BASIC CHEMISTRY

### INORGANIC CHEMISTRY

The only difficult part of chemistry to the novice is the new terms he hears. Let's go slowly through these new terms and the rest will be easy.

What is Chemistry? It is the study of the basic units that make up all substances. These basic units are called atoms. There are some substances that require two or more atoms to exist, and these combinations are called molecules. The atom or the molecule is the smallest unit into which any substance can be broken. These basic units of atoms and molecules can react with each other to form new substances with completely new characteristics.

The world is made up of two basic chemical systems--organic and inorganic. The easiest to understand is inorganic, but many of the basic principles apply also to the organic system.

You, no doubt, already know that inorganic chemistry is concerned with non-living substances while organic chemistry deals with substances which have their origin in a living plant or an animal body.

The inorganic world is made up primarily of salts and oxides. The rocks, sand and minerals of the earth are made up of these. Coal, on the other hand, is an organic substance because it has its origin from ancient decayed plant-life.

Every salt and oxide can be separated into the components from which it is made. Oxides are atoms which unite with the oxygen atoms of the air to form this new substance. Sand is silicon oxide (called silicon dioxide because it reacts with two oxygen atoms -  $(\text{SiO}_2)$ ).

Salt can be separated into two components--an acid and a base. The acid and the base are opposed to each other and react actively when mixed together to form this salt. The most common example is table salt, which can be formed by reacting hydrochloric acid with the base, sodium hydroxide. The chemist writes this in symbols as follows:



(hydrochloric acid) + (sodium hydroxide)  $\rightarrow$  (sodium chloride) + (water)

This is a rapid reaction; and if the acid and the base (also called alkali) are strong, then a great deal of heat is generated, which can cause an explosion-like reaction. Great caution must be used in this neutralization reaction. The more dilute the acids and bases, the safer will be this reaction. The reaction of an acid and a base in equal amounts is called neutralization. In our next lesson we will cover the practical applications of the theory we have completed.

The next lesson covers titration and pH.