

Elements and Compounds. When sodium metal and chlorine gas are heated together, a white solid called sodium chloride is formed. Compounds are pure substances that are composed of two or more elements combined in definite proportions. It consists of nitrogen, oxygen, and argon gases, but also contains solid particles of pollen and dust. The action of an electric current, called electrolysis, is one method that can be used to decompose both water and molten table salt into their constituent elements. The individual chunks (particles) of ice and salt are clearly visible, and the particles are so large, they are not evenly dispersed. An element is a pure substance that cannot be decomposed into simpler substances by ordinary chemical reactions. They can be homogeneous or heterogeneous depending on the state of subdivision of the components. On the ordinary scale of observation we cannot detect any chemical or physical differences between adjacent regions of the mixture. The properties of a homogeneous mixture vary since they depend on the percent composition. Chemical properties most often are descriptions of reactions that a substance undergoes when brought in contact with other substances. A pure substance is a form of matter that has a definite composition and distinct properties. Just as each individual person has a set of characteristics, such as fingerprints and color of eyes and hair, each pure substance has characteristic properues. A number of common elements and their symbols are listed in the textbook in Table 1.1. The original crystals of salt have dissolved and are dispersed evenly. A mixture that has the same composition throughout is said to be a homogeneous mixture. And indeed the individual particles of their components can often be seen by the unaided eye. Any mixture, whether it be homogeneous or heterogeneous, can be separated into its pure components by physical means. Mixtures.ust.