

PRE-LAB DISCUSSION

Mixtures are combinations of two or more pure substances in which chemical properties of the starting substances do not change. Mixtures can be classified as homogeneous and heterogeneous.

Homogeneous mixtures have the same properties and definite composition in all parts of mixtures. They are also called solutions. For examples: water-salt mixture, water-alcohol mixture.

Heterogeneous mixtures do not have the same properties throughout in their composition For examples: water-oil mixture, water-powder chalk mixture.

Mixtures consist of two or more pure substances. They are not pure substances. Unlike pure substances, they have variable composition. One of the distinctive characteristics of a mixture of substances is that it is usually possible to separate the constituents by physical means. There are great many different methods used to separate a wide variety of mixtures, and the particular method employed for any given depends upon the nature of its constituents.

Your teacher will demonstrate the proper way of folding a filter paper and arranging the apparatus.

PURPOSE

To prepare the mixtures and investigate the properties of them and to separate the mixtures into components.

EQUIPMENT

funnel beaker	evaporating dish
filter paper	thermometer
U magnet	magnifying glass
a piece of woolen cloth	watch glass
a comb or a glass rod	

MATERIALS

distilled water	alcohol
salt	CaCO ₃ (Powder chalk)
iron powder	sulfur powder
dry powdered red pepper	sand

PROCEDURE

PART A:

1. Take a spoon full of iron powder and a spoon full of sulfur powder onto a piece of paper.
2. Examine the mixture with naked eyes.
 - a) Could you see the bits of iron and sulfur in the mixture?
 - b) Do iron and sulfur lose their characteristic properties during the formation of the mixture?
3. Bring the magnet near the mixture on the paper. Does the magnet attract the iron bits in the mixture? How can you explain the result?

PART B:

4. Put a spoon full of table salt and a spoon full of red pepper into the beaker. Mix the substances well.
5. Pour some of the mixture on your notebook.
6. Rub the comb or the glass rod with the woolen cloth. Bring the electrified end of the comb very near the salt-pepper mixture on the paper, but do not touch it. Record your observations.
7. Transfer the component attracted by the comb into the watch glass.

PART C:

8. Take a spoon full of table salt and a spoon full of sand onto a piece of paper.
9. Stir the mixture well. Then put the mixture into the beaker, which contains water.
10. Filter the mixture and then evaporate the water.

PART D:

11. Mix 10-ml water, 10-ml alcohol, 10 g of salt, and 10 grams of powder chalk in a beaker.
12. Filtrate this mixture using funnel and filter paper and observe. What is the compound on the filter paper?
13. Gently heat the mixture by experimenting the alcohol odor until the odor finish.
14. Caution: Use thermometer and be sure that the temperature of mixture must be max. 80°C. Why?
15. Then pour this mixture into an evaporating dish and heat gently to evaporate all the water. Notice that remaining part is just salt in the evaporating dish.

CONCLUSION AND QUESTIONS

1. Suppose two substances are mixed to give a mixture. Are the properties of the substance changed by this mixing process?
2. Is it necessary for the components to have a certain ratio of mass or volume to produce a mixture?
3. Are the mixtures in the experiment homogeneous or heterogeneous? Why?
4. In step 6, after rubbing the comb with woolen cloth, you must immediately bring it very close to the mixture without touching it to other objects. Why?