

Separation of a Mixture Activity

Procedure:

Use forceps to remove the lead shot from the mixture and place them in a separate container. Then wrap a magnet in wax paper and drag it over what remains of the mixture, thus removing the magnetic powder. Carefully move the magnet, wax paper, and magnetic powder over a separate container before gently removing the magnet from the back of the wax paper. Add a small amount of deionized water to the mixture and stir thoroughly with the stirring rod. Then fold a piece of filter paper until it forms a cone-like shape before placing the point of it into the wide end of a funnel. Place the narrow end of the funnel into a medium-sized beaker and hold the mouth of the funnel while slowly pouring some of the mixture into it, thus separating the sand from the other substances. Once all of the liquid is in the beaker, take out the wet filter paper and place it on an evaporating dish to let the sand dry. Then set the beaker out until the water inside of it evaporates. Once the sodium chloride is the only thing left, scrape it from the sides and put it in yet another separate container. Then weigh each of the separate components.

Data:

Table 1. Masses Collected During the Experiment

<u>Component</u>	<u>Mass</u>
<i>Recovered Lead Shot</i>	3.9 g
<i>Recovered Magnetic Powder</i>	1.5 g
<i>Recovered Sodium Chloride</i>	0.60 g
<i>Recovered Sand</i>	0.87 g
Total Mass of Recovered Components	6.9 g
Initial Sample	8.0 g

Table 2. Experiment Results

<i>% Composition of Lead Shot</i>	56%
<i>% Composition of Magnetic Powder</i>	22%
<i>% Composition of Sodium Chloride</i>	8.7%
<i>% Composition of Sand</i>	13%
<i>% Recovery</i>	86%
<i>% Error</i>	14%

Observations

- Some sand and salt stuck to the magnetic powder as it was being removed
- Some sand stuck to the filter paper during the filtration process
- Some salt stuck to the sides of the beaker after the water had evaporated
- Small parts of the components got left in their original container after they were moved to another container

Discussion:

The sum of the individual components didn't equal the mass of the initial sample because it was very difficult to move the components from one container to another without leaving a small part of it behind. For example, the most losses were caused by components getting stuck to their receptacle which made it nearly impossible to get all of it off. Portions of the components were also lost when some of them stuck together while trying to remove just one of the components. If one were to repeat this experiment it may be helpful to take the mass of the empty filter paper, beaker, etc that you plan to separate the components into and then subtract that from the total mass of the component while it's in the container.