

Laboratory: Separation of Salt and Sand

Materials

For each pair of students

1 container of sand and coarse salt mixed together

Standard laboratory glassware

Filter paper

Magnifying glass

Through out this laboratory keep a detailed log of all observations in your laboratory notebook. Notebooks should be illustrated with drawings.

To do:

1. Look at salt and sand under a microscope and with a magnifying glass. In your laboratory notebook describe what you see. Note colors and shapes of crystals.
2. Determine a way to separate the mixture and execute it. You may use the Internet as a research tool if you do not have any ideas about how to accomplish the separation.
3. Examine the salt and the sand using a magnifying glass after you have separated these substances. How are these two substances alike or different from the mixture you examined previously?
4. Determine the percentage composition (salt and sand) of the mixture by mass. To do this, take the mass in grams of the sand divided by the total mass (sand + salt) X 100%. Do the same calculation starting with the mass in grams of the recovered salt. These two percentages should add up to 100%.
5. Determine the percent recovery of your substances. To do this, divide the final total mass (sand + salt) by the total original mass of the mixture and convert this to a percentage (multiply by 100). In your laboratory notebook write down some ideas about how some of the material might have been lost during the separation. If you seem to have more mass after the separation then explain how this result could have occurred.
6. Discuss your procedure and your results. Comment on the success of this laboratory in achieving the objective – the separation of a mixture.

NOTE: Notice the spelling of the word separation. I have often seen this word misspelled as seperation. When I was in 5th grade my teacher told me there was "a rat" in separation. I have never forgotten this.

Questions to answer in your summary (in the laboratory notebook)

1. Is the procedure you used scalable? In other words will it work on much larger quantities?
2. Is there any evidence that anything else is present in the mixture besides salt and sand? If so, what do you think might also be present in this mixture.
3. What is "chemical purity"?