

## Separation of Mixture Report

**Procedure:** To begin, a heterogeneous mixture of table salt, sand, lead shots, and magnetic shavings was taken and weighed to 8.0 grams by using a watch glass and a balance. The tare was set with the watch glass on it in order to not capture the weight of the watch glass. The solid mixture was then poured onto the watch glass until the scale presented 8.0 grams. The lead shot was then removed using forceps due to their larger size. After all the lead shots were removed from the mixture, the magnetic powder was then removed using a fingerprint magnet with a plastic shield. Any excess sand or salt that appeared to remain on the finger print magnet was shaken off over the solid mixture. Another watch glass was used to place the magnetic powder on (the watch glass was set as a tare, so the watch glass's weight was not accounted for). After all the magnetic shavings were removed from the mixture, the sand and salt were left behind. To remove the salt from the sand, a filter paper was folded to fit inside of a funnel, which was placed over an empty beaker. Another beaker was filled with 100 mL of deionized water and the remaining mixture of salt and sand was mixed into the water. The mixture and water were then poured over the filter in order to separate the sand from the salt water. The sand and salt were then baked separately and dried and the water was baked using a hot plate to remove the water from both the sand and the salt water solution. Evaporating the water led to the salt being left in the beaker. To collect the salt from the beaker, a spatula was used to scrape the inside of the beaker and placed on a wax sheet. The wax sheet's mass was set as a tare so when the salt was weighed, the wax sheet's mass was not taken into account. The same process was used to extract the sand from the filter paper.

**Data/Results:**

Masses of Initial and Individual Samples in Grams and Percent Composition, Percent Recovery, and Percent Error:

<b>Mass of Initial Sample</b>	8.005 grams
<b>Mass of Individual Samples</b>	
Mass of Lead Shots	3.378 grams
Mass of Magnetic Shavings	3.266 grams
Mass of Sand	1.747 grams
Mass of Salt	0.954 grams
<b>Percent Composition of Individual Components</b>	
Lead Shots	36.15%
Magnetic Shavings	34.95%
Sand	18.69%
Salt	10.21%
<b>Percent Recovery</b>	116.7%
<b>Percent Error</b>	16.74%

**Discussion:** When attempting to separate the magnetic shavings from the remaining salt and sand, some salt and sand were collected with the magnetic shavings when applying a fingerprint magnet to the mixture. Attempts were made to shake the sand and salt off the magnetic shavings, but this proved to be difficult and could not be perfectly accomplished. Another error was made when separating the salt from the sand. The masses continuously seemed to work to our favor, but when the salt and the sand were being separated, some of the sand became fused into the filter paper and some of the remaining salt that was stuck to the beaker was unable to be obtained. Because of this, it was originally thought that our percent recovery would be less than 100%; however, the percent composition was in excess, at 116.7%. This extra percent recovery might be due to excess water from attempting to separate the salt from the sand. Perhaps not all the water completely evaporated.