

Lab - Percent Yield

Purpose: To compare the theoretical mass of one of the products of a double replacement reaction to the experimentally determined mass of the same product.

Equipment:

Balance	filter paper	weighing paper
Beakers	Ring stand	graduated cylinder
funnel	Erlenmeyer flask	safety goggles

Materials:

Lead (II) Nitrate	Potassium Iodide	Distilled water
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Procedure:

- 1) Weigh approximately 1.25 g lead(II) nitrate using a balance and weighing paper. Record the exact mass in your data table
- 2) Place the lead (II) nitrate in a clean 250 ml beaker and add 100 ml of distilled water. Using a stirring rod, ensure all of the solid is dissolved.
- 3) Weigh approximately 1.5 grams of Potassium Iodide using a balance and weighing paper. Place the potassium iodide in a 100 ml beaker and dissolve it in 50 ml of water. Stir until dissolved.
- 4) Pour the potassium iodide solution into the lead nitrate solution. Stir and record your observations.
- 5) Weigh a piece of filter paper and record the results. Place the filter paper in a plastic funnel that is resting in an Erlenmeyer flask.
- 6) Pour the contents of the 250 ml beaker slowly through the filter paper. Do not let the liquid rise to a level higher than the filter paper.
- 7) Rinse the beaker with distilled water to remove as much of the precipitate as possible. Filter all of the rinses.
- 8) After all of the liquid has passed through the funnel, carefully remove the filter paper and place it on a paper towel with your name on it. Put the paper towel and filter paper on the cart to dry overnight.
- 9) Find the mass of the dry filter paper and precipitate after it has dried.

Data Table:

Exact mass of lead (II) nitrate (g)	
Mass of filter paper (g)	
Mass of filter paper and precipitate (g)	
Observations	

Calculations:

- 1) Write a balanced equation for the double replacement reaction. The precipitate formed is Lead (II) iodide.
- 2) Using mass-mass stoichiometry, find the theoretical yield of the lead (II) iodide precipitate that should be produced when reacting 1.25 g lead (II) nitrate.
- 3) Find the experimental mass of the lead (II) iodide formed.
- 4) Calculate the percent yield for the lab experiment
- 5) Using the mass-mass stoichiometry, calculate how much potassium iodide would have been needed to react completely with the 1.25 grams of lead (II)- nitrate. Why did we use more KI than we needed to?

Waste Disposal: All liquid may be flushed down the drain. The dried precipitate should be given to your teacher for proper disposal.