

Chemistry 11
Aluminum Foil Lab

/14

Name:
Date:
Block:

Purpose

In this activity, you will design an experiment to determine the thickness of a piece of aluminum foil. You will record all your observations and complete all your calculations using the correct number of significant figures.

Background

The thickness of a piece of aluminum foil is difficult to measure with tools that are easily available (ex. ruler). It is only with more precise equipment (such as a micrometer), that we are able to measure such thicknesses.

Without a micrometer, we can figure out the thickness using density, area and volume.

$$\text{Volume} = \text{Area} \times \text{Thickness}$$

$$\text{Area} = \text{Length} \times \text{Width}$$

$$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$$

$$\text{Density of Aluminum} = 2.70 \text{ g/cm}^3$$

Procedure

1. After reading the background information, figure out how to find the thickness of a piece of aluminum foil WITHOUT directly measuring it. Record the steps you will follow and a list of materials in the space below.

- Record all your data in a neatly organized chart. Consider making multiple measurements to increase the overall accuracy. Record all measurements to the correct number of significant figures.

- Perform all calculations. Be neat, showing all equations and steps. Remember to record your answer to the correct number of significant figures.

The **calculated** thickness of a piece of aluminum foil is: _____

- Once you've calculated what the thickness of the aluminum foil should be, use a micrometer and measure the actual thickness.

The **actual** thickness of a piece of aluminum foil is: _____

- Calculate the percent difference between your calculated thickness and the actual thickness using the equation given below.

$$\% \text{ Difference} = \frac{| \text{Calculated Thickness} - \text{Actual Thickness} |}{\left(\frac{\text{Calculated Thickness} + \text{Actual Thickness}}{2} \right)} \times 100\%$$

The percent difference is: _____

- Complete your lab report on a separate sheet of paper (see assessment below for lab report sections). Attach your piece of aluminum foil to your lab report.

Assessment

Objective (1 mark)

- What is the objective of your lab?

Procedure (2 marks)

- Clear, concise, and complete
- Supports the objective

Data/Results (4 marks)

- Neat and organized (chart, table, etc.)
- Includes correct units
- Accurate length (including SF)
- Accurate width (including SF)

Calculations (6 marks)

- Shows calculations (general equation, substituted values, final answer)
- Accurate
- Final answer recorded to correct SF

Conclusion (1 mark)

- Did you meet your objective? Why or why not?