

SCH3U: The Heat of Combustion of Paraffin (Candle) Wax

Purpose:

To develop a lab procedure and build a calorimeter which will give the most accurate value for the heat of combustion of paraffin.

Materials:

Provided: Electronic balance, thermometers, graduated cylinders, stirring rods, matches, candles, water, small aluminum muffin tins, safety masks.

To be Designed: A calorimeter apparatus using recyclable materials only.

Procedure:

- 1) In your lab notebook, develop an experimental design for the heat of combustion of paraffin
- 2) Using recyclable materials, design and build a calorimeter that will give the most accurate results for the heat of combustion of paraffin. Provide reasons for your design choice.
- 3) Gather and interpret data and calculate the energy liberated in the combustion of paraffin in J/g, using the equation $Q=mc\Delta T$

Analysis

1. Using your experimental results, calculate the following:
 - a. The thermal energy that was absorbed by the water
 - b. The Heat of Combustion of Paraffin Wax per gram
2. Write a balanced thermochemical reaction for the complete combustion of paraffin wax ($C_{25}H_{52}$)

Conclusion and Evaluation

Consider your design and procedure for this investigation. What are potential sources for error? What are some specific improvements that could be made to improve your results?