

Power of the Bunsen Burner

Aim

To estimate the power output of a Bunsen burner.

Apparatus (per group)

- 1 L Pyrex[®] beaker
- Bunsen burner
- tripod and gauze mat
- stop watch
- thermometer
- access to a balance

Pre-Lab

- For this lab, identify and write down your experimental hypothesis, the dependent variable and the independent variable, and which variables (if any) you intend to control.
- Discuss with your lab partners how you will accurately measure the mass of the water that you will heat in the beaker.
- Discuss with your lab partners how you will determine the power of the Bunsen once you know how much energy it supplied.
- Prepare a table suitable for recording your measurements.

Lab Notes

- Add about 700-800 mL of water to the beaker, determine the mass and initial temperature of the water you added and record the values.
- Put the beaker on the tripod and gauze mat, and heat it for 5 minutes using the hottest Bunsen flame.
- Stir the water, and measure and record the final temperature.

Post-Lab Discussion

1. Calculate the energy supplied to the water using the relationship
Energy supplied = (mass of water) x (4180) x (temperature change of water)
(If you have not yet learned about the specific heat capacity of water being $4180 \text{ J kg}^{-1} \text{ }^{\circ}\text{C}^{-1}$, don't worry – this will be covered soon.)
2. Calculate the power of the Bunsen burner.
3. Explain why your calculated value is an estimate. Is it likely to be lower or higher than the real value? Why?
4. Why were you instructed to measure the temperature change of the water over a 5 minute period rather than, say, 15 minutes?
5. Why were you instructed to stir the water before measuring its temperature?
6. How could you estimate the power of an electric hotplate?
7. Write a conclusion for your lab. You should refer to your original hypothesis, and to the dependent and independent variables.