Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period \_\_\_\_\_\_

**Bunsen Burner Lab: Tools of the Physical Scientist**

**Background:** Often a chemist needs to heat materials. The Bunsen Burner is one of the most

efficient ways of doing this. Burners come in a variety of designs but most operate on the principle of mixing gas with air to produce a hot flame. In this lab you will learn how to light and adjust a burner flame and to locate the hottest part of the flame.



**Parts of the Bunsen Burner:**

A. Barrel – where gas and air are mixed

B. Collar – adjust the air intake

C. Air intake openings – air enters here

D. Gas Flow Valve – regulates flow of gas

**Materials:**

spark lighter Bunsen Burner support stand with ring wire screen

250 mL beaker 100mL graduated cylinder thermometer

**Problem to solve:** How do you light and adjust a Bunsen Burner?

Where is the hottest part of a burner flame?

**Procedure:**

**Part 1: Lighting the Burner**

1. Clear the area of all flammable objects (including clothing and your hair!)
2. Make sure all supplies and set-up are complete.
3. Barely open the valve until you hear a slight hiss.
4. Bring striker near top of open valve and light.
5. Allow to warm up on LOW flame for 60 seconds before adjusting flame.
6. Never tilt or tip burner.
7. Adjust air control ring to vary flame intensity. Adjust the barrel so that the flame is pale blue with a dark inner core.
8. To shut off, close valve completely.
9. Allow to cool and put away

**Part 2: The Experiment**

1. Set up the support stand, ring, and wire screen as shown in the photos (see next page).

2. Position the ring clamp so that the beaker is at the base of the flame (Position A).

3. Put 100mL of water into the beaker and record the starting temperature of the water on your data sheet.

4. Heat the water for 2 minutes recording the temperature every 15 seconds.

5. Repeat this procedure for positions B,C, and D using fresh water each time. Record all data.

Bunsen Burner Lab – Data chart and questions

Position A Position B Position C Position D

   

(base of flame) (tip of inner blue flame) (top of flame) (2 cm above flame)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Position | Starting temp °C | 15 sec | 30 sec | 45 sec | 60 sec | 75 sec | 90 sec | 105 sec | 120 sec |
| A |  |  |  |  |  |  |  |  |  |
| B |  |  |  |  |  |  |  |  |  |
| C |  |  |  |  |  |  |  |  |  |
| D |  |  |  |  |  |  |  |  |  |

Questions:

1. The Bunsen burner mixes \_\_\_\_\_\_\_\_\_ with \_\_\_\_\_\_\_\_\_\_.

2. When the air intake openings are completely closed the flame has a\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ color.

3. According to your results, where is the hottest part of the flame?

Position A. B, C, or D. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Parts of the Flame**



A. Base of flame

B. Tip of inside blue cone

C. Top of the flame

D. 2 cm above the flame

Position C

Position D

Position A

Position B

**Graphing Data**

