

Name \_\_\_\_\_

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Date \_\_\_\_\_

Due Date \_\_\_\_\_

Mark \_\_\_\_\_/10

*Correct and Hand in Again by* \_\_\_\_\_

## Chemistry 11

## Experiment 5-1 – Percentage of Oxygen in Potassium Chlorate

**Purpose:** To experimentally determine the percentage of oxygen by mass in potassium chlorate.

**Procedure:**

1. Get a clean, dry 18 x 150 mm test tube and weigh it. Record the mass in Table 5-1 below.
2. Fill it to about  $\frac{1}{4}$  full of potassium chlorate ( $KClO_3$ ). Weigh the test tube with the  $KClO_3$  and record the mass in Table 5-1.
3. Put on safety goggles and an apron!
4. Clamp the test tube with  $KClO_3$  to a ring stand and heat with a Bunsen burner until bubbling is observed.
5. After it has been bubbling for awhile, test the gas with a glowing splint. Be careful NOT to drop anything into the test tube! Record the result in Table 5-2 below.
6. Continue heating until no more gas is observed and the bubbling has stopped. A solid material will remain in the test tube.
7. Let the test tube and contents cool for 5 minutes.
8. Weigh the test tube and contents ( $KCl$ ) and record the mass in Table 5-1.
9. Wash the solid out of the test tube and clean it out. Put away equipment. Wash your hands.

**Data:****Table 5-1**

1	Mass of empty test tube	g
2	Mass of test tube & $KClO_3$ before heating	g
3	Mass of test tube & $KCl$ after heating	g

**Table 5-2**

When the gas is tested with a glowing splint it
The gas being produced is _____

**Calculations:**

1. Using Table 5-1, calculate the mass of  $KClO_3$  that you started with.

**Mass of  $KClO_3$**  \_\_\_\_\_ g

2. Using Table 5-1, calculate the mass of oxygen ( $O_2$ ) released during heating.  
(This is mass of test tube &  $KClO_3$  before heating – test tube and  $KCl$  after heating)

**Mass of Oxygen** \_\_\_\_\_ g

3. Calculate the experimental percentage of oxygen in  $KClO_3$ :

$$\% \text{ Oxygen} = \frac{\text{Mass of Oxygen}}{\text{Mass of } KClO_3} \times 100 \%$$

**Experimental % Oxygen** = \_\_\_\_\_ x 100 % = \_\_\_\_\_ %

4. Calculate the theoretical percentage of oxygen in  $KClO_3$ . Use the method you learned in Tutorial 5-1:

**Theoretical % Oxygen** = \_\_\_\_\_ %

5. Calculate the difference between the Theoretical % Oxygen and the Experimental % Oxygen. State this difference as an absolute value. (+)

**Difference** between **Theoretical %** and **Experimental % Oxygen** = \_\_\_\_\_ %

6. Suggest reasons for this difference: