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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: