Chemistry: *Stoichiometry and Baking Soda (NaHCO₃)*

Purposes: 1. Calculate theoretical mass of NaCl based on a known mass of $NaHCO_3$.
2. Experimentally determine the actual mass of NaCl produced.
3. Calculate the percent yield for your experiment.

Reaction Equation: $NaHCO_3(s) + HCl(aq) \rightarrow NaCl(s) + CO_2(g) + H_2O(l)$

Materials: safety glasses   baking soda ($NaHCO_3$)   concentrated HCl and dropper
evaporating dish   ring stand with ring   bunsen burner and matches
watch glass   wire gauze   tongs

Procedure:

1. Find the mass of the evaporating dish and watch glass. Record this mass in the Data Table.
2. Add $^1/_3$ of a teaspoon of baking soda to the evaporating dish, and record the total mass in the Data Table.
3. Cover the evaporating dish with the watch glass so that only the spout of the evaporating dish is exposed.
4. Use the dropper to drip HCl down the spout and into the dish. Add HCl until the fizzing ceases.
5. Leaving the watch glass in place, boil off the liquid until only table salt (NaCl) remains in the dish.
6. Let the dish cool for five minutes, then weigh it again and record the mass in the Data Table.
7. Clean up by rinsing your equipment with water and wiping dry with a paper towel.

Data Table: (please include units)

Quantity Measured	Mass
evaporating dish, watch glass	
evaporating dish, watch glass, $NaHCO_3$	
evaporating dish, watch glass, NaCl	
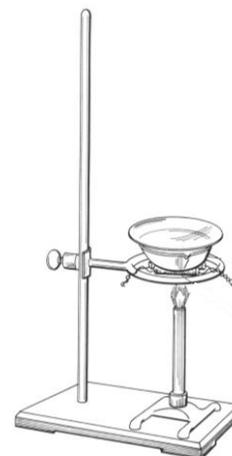
Calculations:

1. Find the theoretical mass of NaCl that would be produced if your experiment were perfect.

2. Find the actual mass of NaCl that you obtained.

3. Find the percent yield for your experiment. If your percent yield is greater than 100%, provide at least one possible source of error that might have caused you to get more than 100% yield.