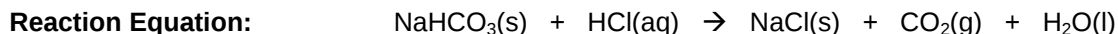


Chemistry: *Stoichiometry and Baking Soda (NaHCO₃)*

- Purposes:**
1. Calculate theoretical mass of NaCl based on a known mass of NaHCO₃.
 2. Experimentally determine the actual mass of NaCl produced.
 3. Calculate the percent yield for your experiment.



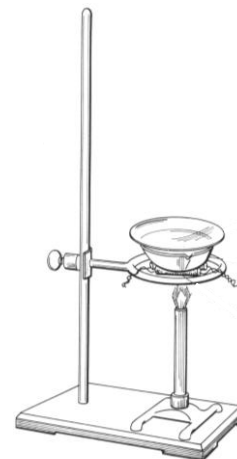
Materials:	safety glasses	baking soda (NaHCO ₃)	concentrated HCl and dropper
	evaporating dish	ring stand with ring	bunsen burner and matches
	watch glass	wire gauze	tongs

Procedure:

1. Find the mass of the evaporating dish and watch glass. Record this mass in the Data Table.
2. Add $\frac{1}{3}$ 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)

<i>Quantity Measured</i>	<i>Mass</i>
evaporating dish, watch glass	90.25 g
evaporating dish, watch glass, NaHCO ₃	93.92 g
evaporating dish, watch glass, NaCl	92.68 g



Calculations:

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

$$x \text{ g NaCl} = 3.67 \text{ g NaHCO}_3 \left(\frac{1 \text{ mol NaHCO}_3}{84 \text{ g NaHCO}_3} \right) \left(\frac{1 \text{ mol NaCl}}{1 \text{ mol NaHCO}_3} \right) \left(\frac{58.5 \text{ g NaCl}}{1 \text{ mol NaCl}} \right) = 2.56 \text{ g NaCl}$$

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

$$\mathbf{92.68 \text{ g} - 90.25 \text{ g} = 2.43 \text{ g NaCl} \text{ (actual yield)}}$$

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.

$$\% \text{ yield} = \frac{\text{actual yield}}{\text{theoretical yield}} \times 100\% \Rightarrow \frac{2.43 \text{ g NaCl}}{2.56 \text{ g NaCl}} \times 100\% \Rightarrow 95\% \text{ yield}$$