

Lab: Don't Pop It!

Purpose: Using stoichiometric values, fill a baggie with carbon dioxide without popping the bag.

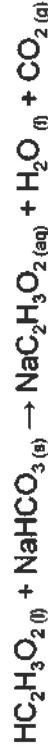
Minimum Materials:

- 3 identical-sized Ziplock baggies
- Baking soda
- Vinegar

NOTES

- The density of vinegar is 1.05 g/mL
- 4% of the vinegar is active acetic acid. The rest is water.

Balanced Equation:



Task: You are tasked with filling a baggie with carbon dioxide gas, produced from the reaction of baking soda and vinegar. You will want to fill the baggie to the maximum capacity WITHOUT popping it. You will calculate your amounts first, then you will demonstrate your findings with your teacher.

Explanation of b. soda + vinegar needed:

Show your work in the space provided. Most of your work will be graded orally.

Volume of baggie

$$\boxed{} \text{ L CO}_2 \times \frac{1 \text{ mol CO}_2}{22.4 \text{ L CO}_2} \times \frac{1 \text{ mol NaHCO}_3}{1 \text{ mol CO}_2} \times \frac{84 \text{ g NaHCO}_3}{1 \text{ mol NaHCO}_3} = \boxed{} \text{ g}$$

Use the as
baking soda
↓
Baking Soda

Volume of baggie

$$\boxed{} \text{ L CO}_2 \times \frac{1 \text{ mol CO}_2}{22.4 \text{ L CO}_2} \times \frac{1 \text{ mol HC}_2\text{H}_3\text{O}_2}{1 \text{ mol CO}_2} \times \frac{60 \text{ g HC}_2\text{H}_3\text{O}_2}{1 \text{ mol HC}_2\text{H}_3\text{O}_2} \times \frac{1 \text{ mL a. acid}}{1.05 \text{ g HC}_2\text{H}_3\text{O}_2} \times \frac{1 \text{ mL of vinegar}}{0.04 \text{ mL a. acid}} = \boxed{} \text{ mL}$$

* Recommended *
Run in an excess of
vinegar. Estimate high

$$= \boxed{} \text{ mL vinegar needed.}$$

Material

- Baggie x 2
- grad. cylinder
- balance
- vinegar
- Baking soda
- water

Determine volume of baggie:

- Fill baggie with water. Measure the amount of water added with a grad. cylinder.

Physical Demo:

- ~~pour the~~ Pour in b. soda to baggie, then spin the b. soda in a corner to protect it from the vinegar. Add the vinegar and squeeze out any air, careful not to mix them. Seal the bag and unleash the b. soda. Lay flat on table and don't touch! It'll be tight.

Zwiers

- Not enough vinegar
- Too much b. soda.
- Didn't squeeze out air
- Ect...