

# Gas in a Bottle

**Aim:** To determine the amount of carbon dioxide in a bottle of soft drink.

**Equipment:**

- 2 Schweppes® Dry Ginger Ales 315ml.
- Beam balance
- Water

**Method:**

1. Record the mass of one of the unopened bottles. This bottle will now be known as bottle #1.
2. Open the cap of bottle #2.
3. Drink contents of bottle #2.
4. Fill bottle #2 with water to the same level as bottle #1.
5. Record mass of bottle #2 and water.
6. Open the cap of bottle #1.
7. Leave both bottles with their caps off for five hours.
8. Re-record mass both bottles.
9. Calculate loss of mass for both bottles.
10. Allow for changes in bottle #1's mass due to evaporation by the figures taken from bottle #2.
11. Calculate litres of gas lost.

**Results:**

Bottle #	Unopened / Full of water mass (g)	Mass after 5 hours (g)	Mass difference (g)
1	526.8	524.5	2.3
2	516.5	516.5	0.0

From the data collected from bottle #2, we can assume that no recordable amount of water from bottle #1 has been lost due to evaporation.

**Calculations:**

$$\text{Moles of CO}_2 = \frac{2.3}{44} = 0.052272727$$

$$\text{Volume of Gas Lost} = 0.052272727 \times 24.79 = 1.29584 \text{ L}$$

**Conclusion:** A bottle of soft drink contains approximately 1.3 litres of carbon dioxide gas.

**Evaluation:** A successful practical.