

POURING OUT A CANDLE

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INTRODUCTION

I always use this demonstration in combination with the preparation of oxygen. I will use the oxygen to cause a glowing splint to burst into flame and then immediately place the burning splint into a beaker of carbon dioxide.

MATERIALS NEEDED

Sodium bicarbonate, NaHCO_3 , or sodium carbonate, Na_2CO_3 , or calcium carbonate, CaCO_3
Hydrochloric acid, HCl , 1 M (Prepared by adding 8.3 mL of concentrated hydrochloric acid to 91.7 mL of water. Note: Remember to always add the acid to the water.) or vinegar (5% acetic acid solution)
Beaker, 2000-mL or larger (I prefer a 4000-mL beaker)
Beaker, 400-mL or 600-mL
Plastic party punch bowl scoop (clear, colorless scoop preferred) or substitute a soup ladle
Wood splint
Candle
Tongs (crucible tongs or equivalent)

SAFETY PRECAUTIONS

Wear safety goggles when performing this activity.

All materials used in this procedure are safe in their diluted forms.

DISPOSAL

The materials used in this experiment can usually be disposed of down the drain with running water. Check local regulations before disposal.

PROCEDURE

In a large beaker or jar (4-Liter) add baking soda (sodium bicarbonate, NaHCO_3) and vinegar (5% acetic acid, $\text{HC}_2\text{H}_3\text{O}_2$) to produce carbon dioxide.

To extinguish a burning candle, pour some carbon dioxide from the beaker over a burning candle. Be careful not to pour any liquid. For a more dramatic effect, place an empty glass, clear plastic cup, or a clear plastic punch bowl scoop into the container to scoop out some carbon dioxide, then extinguish a candle by pouring carbon dioxide over it. Follow this with a class discussion of some properties of carbon dioxide as they observed them.