



California State University of Bakersfield, Department of Chemistry

Fight Fire with Science



Standards:

HS-PS1-2. Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.

KE23 C.1 - Define enthalpy and entropy and explain the relationship to exothermic and endothermic reactions:

Introduction:

Do you like fire? I do. However sometimes fires are more dangerous than we anticipate and they tend to get out of hand. Luckily with a few simple ingredients you can make your very own fire extinguisher today.

Materials:

- Jar with a lid
- Drill
- Baking soda
- Vinegar
- Small cups
- Pipette
- Matches
- Small candle
- Scissors
- Duct tape
- Ribbon or string

Safety:

- Always have an adult with you to help you during your experiment.
- Always wear eye protection and gloves when doing chemistry experiments

Procedure:

1. Drill a hole through the lid of the jar. It should be big enough to fit a pipette.
2. Cut both ends of the pipette using scissors and slip it through the hole in the lid with the top facing the inside of the jar.
3. Drill two holes on opposite sides of each small cup. Tie each cup together with one on top of the other, but leaving part of the string hanging from the sides.
4. Fill the jar about 1/3 full of vinegar.
5. Pour about 15 g of baking soda into each small cup, making a total of 30 g of baking soda inside the jar.
6. Lower the cups using the string until it is right above the vinegar. Leaving the excess string on the outside as you close the jar with the lid.
7. Shake well by a lit candle.

Data and Observations:

Record your observations in this space

What kind of gas was released?

References:

1. <http://chemistry.about.com/od/gases/a/Homemade-Fire-Extinguisher-Science-Project.htm>.
2. Conducted and analyzed by: Mike Griebing, Evelyn Arce, Maria Jessica Cruz, Javier Alex Chavez, Taylor O'Connor.