California State University of Bakersfield, Department of Chemistry

Sterno

Standards:

MSPS 1-2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

Introduction:

Sterno is useful for camping, fondue, pyro, and setting objects on fire. The following will information will instruct you on how to make Sterno flaming jelly from Antacid, Vinegar, and Alcohol. This sterno was made using calcium carbonate antacid tablets, vinegar, and either ethanol or isopropyl. Antacid tablets were crushed and added to vinegar to make calcium acetate. The Calcium acetate was then added to the ethanol or alcohol. The calcium acetate causes the alcohol to gel.

Materials:

- 1000 mg Antacid Tablets containing Calcium Carbonate or 1,000mg of Calcium Carbonate Powder
- Vinegar
- 95 % Ethanol or 90-99% Isopropanol Alcohol (Lesser percentage will not work as well.)
- Mortar and pestle
- Graduated cylinder
- Glass stirring rod
- Beakers for mixing
- Scraper

Safety:

- Always have an adult with you to help you during your experiment.
- Always wear eye protection and gloves when doing chemistry experiments
- Ethanol / Isopropanol alcohol is flammable, so it must be kept away from any open flames or heat.
- Conduct this experiment in a well-ventilated area.

This material is based upon work supported by the Corporation for National and Community Service under Learn and Serve America Grant No. 10LHPCA001. Opinions or points of view expressed in this document are those of the authors and do not necessarily reflect the official position of the Corporation or the Learn and Serve America Program.

Procedure:

1. Get 1000 mg of calcium carbonate antacid tablets (Check to make sure they contain calcium carbonate because some antacids contain sodium bicarbonate) and crush them into a powder (A better alternative is to use pure calcium carbonate if you can get it).
2. Add this to 10-20 ml of vinegar (Alter the amounts until you get your best results). Mix these together thoroughly then allow to sit. For best results, separate the liquid using a filter from the solids. Keep the liquid and toss the solids out. Then allow the liquid to evaporate some to make it more concentrated.
3. Add a small amount of this slurry to 10 ml of alcohol (90% or higher, we tried this with 91% and a 70%, the 70% was very disappointing), or 95% Ethanol if you can get it.
4. This is should start turning into a gel, mix it up some, and allow to sit. If you add too much of the slurry it will go back to being a liquid.
5. Scrape this gel onto a fire safe container and light it. The amount of time the gel burns will depend on several factors, such as how much alcohol was used, what percentage of alcohol, how long the slurry sat, etc.

Data and Observations:

Record your observations in this space

What did you see? Anything you were not expecting? Something really awesome? Describe it here.

Questions:

Could you cook on this? What modifications if any would you need to make in order to cook on this?

References:

1. Instructables. Make "Sterno" Flaming Jelly from Antacid, Vinegar and Alcohol. http://www.instructables.com/id/Make-quotSternoquot-Flaming-Jelly-from-Antacid/ (accessed July 18, 2013)

This material is based upon work supported by the Corporation for National and Community Service under Learn and Serve America Grant No. 10LHPCA001. Opinions or points of view expressed in this document are those of the authors and do not necessarily reflect the official position of the Corporation or the Learn and Serve America Program.