Grease Fire

Start with Safety—Safety Demonstrations

Introduction

Each year hundreds of people are injured, some fatally, by grease fires and their attempts to put them out. This demonstration shows the dramatic and frightening results when water is splashed on burning grease.

Concepts

- Density
- Combustion

Materials

Aluminum foil
Baking soda, $NaHCO_3$, box
Paraffin wax, 5–8 grams
Bunsen burner
Matches or butane safety lighter
Metal container, small
Newspaper
Ring stand, ring, and wire screen
Wash bottle

Safety Precautions

Wear chemical splash goggles, chemical-resistant gloves, and a chemical-resistant apron. Due to the nature of the demonstration, have a dry powder fire extinguisher available. It is recommended that the demonstration be performed outdoors. Please consult current Material Safety Data Sheets for additional safety, handling, and disposal information.

Procedure

1. In a suitable spot (preferably outdoors) where no combustible materials are overhead, spread out some wet newspaper to catch any splashed wax that may result from the demo. (A 5″ × 5″ area is sufficient.)
2. Place the ring stand on the center of the paper. Place the wire screen on the ring and the can on the wire screen.
3. Place 5 to 8 grams of the paraffin wax in the can. Place the Bunsen burner under the ring.
4. Light the burner and slowly heat the wax until it starts to smoke freely.
5. Attempt to light the wax vapors with a match or safety lighter. When the wax vapors ignite and continue to burn on their own the wax temperature is high enough to complete the demonstration.
6. While the wax is burning on its own, stand or squat at least three feet off to one side and use the wash bottle to squirt a small stream of water into the can. A fire ball will erupt from the pan as the water hits the burning wax and turns to steam! **Caution: Do not stand over or near the burning wax!**
7. Any residual burning wax in the can may be extinguished with a small handful of baking soda, $NaHCO_3$.

Disposal

Any unused paraffin wax may be disposed of according to Flinn Suggested Disposal Method #26b. Please consult your current *Flinn Scientific Catalog/Reference Manual* for general guidelines and specific procedures governing the disposal of laboratory wastes.

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Tips

- Wax is used instead of animal lard or vegetable oil to reduce the amount of smoke produced and aid in the clean up. The effect is the same.
- If a portable burner is used, cover the tank of propane or butane with several layers of soaking wet paper and then a layer of aluminum foil. The foil and wet paper prevent the possible overheating of the liquefied petroleum gas if the burning wax should spill
- The steam splatters the wax and, since the wax is already above the flash point, the increase in surface area of the wax droplets results in rapid combustion. If only a small amount of wax is used, most of the material will be consumed and little will remain to burn.
- Do not attempt the same demonstration with the same can unless it is totally free of any water prior to heating the wax.

Connecting to the National Standards

This laboratory activity relates to the following National Science Education Standards (1996):

Unifying Concepts and Processes: Grades K–12
Systems, order, and organization
Evidence, models, and explanation
Content Standards: Grades 5–8
Content Standard B: Physical Science, properties and changes of properties in matter, understanding of motions and forces
Content Standards: Grades 9–12
Content Standard B: Physical Science, structure and properties of matter, motions and forces

Flinn Scientific—Teaching Chemistry™ eLearning Video Series

A video of the *Grease Fire* activity, presented by Bob Lewis, is available in *Start with Safety—Safety Demonstrations*, part of the Flinn Scientific—Teaching Chemistry eLearning Video Series.

Materials for *Grease Fire* are available from Flinn Scientific, Inc.

Catalog No.	Description
P0003	Paraffin, Wax
AP8960	Butane Safety Lighter

Consult your *Flinn Scientific Catalog/Reference Manual* for current prices.