

## Aluminum and Iodine

### Purpose

To demonstrate the spectacular reaction between two solids Al and I<sub>2</sub>.

### Materials

powdered aluminum	wash bottle / water
solid iodine crystals	small beaker
mortar and pestle	

### Procedure

#### Preparation

1. Place 30 g of iodine crystals in a mortar. Grind to a fine powder.
2. Place 6 g of powdered Al in a small beaker.

#### Presentation

1. Add the Al to the I<sub>2</sub> crystals in the mortar.
2. Near the downdraft hood grind the two solids together. The reaction may begin during this process producing fire and large volumes of purple smoke.
3. If the reaction does not begin during grinding, add a small amount (a couple drops) of water to the edge of the solid mixture and scrape the wet mixture against the mortar with a stirring rod to initiate the reaction.
4. Step away or use an asbestos glove to tilt the mortar. Large amounts of heat and iodine vapor are released.

### Additional Information

1. Iodine vapor will stain hands and clothing. It will sublime off in several hours.
2. The reaction is as follows:



### Questions for the Students

1. Predict the products of the reaction.

2. Write a balance chemical equation for the reaction.
3. What is the purple smoke?
4. Given the amounts used in this reaction predict the limiting reactant.

### **Disposal**

The mortar and pestle should be thoroughly soaked **in the hood** to allow for complete reaction of the chemicals. Once the mixture no longer produces bubbles or smoke, even after vigorous mixing/stirring, the solution can be placed in properly labeled waste container with plenty of water and UI# 93389. The container should be checked every so often to make sure gas build-up doesn't occur.

### **Reference**

University of Illinois, Urbana-Champaign.