

## FLOTATION

Title: **Flotation: How to Make A Nut Float**

Level: **K-12**

Day/Time:

[Academic Expectations](#)

[Core Content for Assessment:](#)

### **Objective:**

The purpose of this exercise is to acquaint students with the concept that minerals can be made to float, thus separating them from waste in an economical manner for further processing.

### **Materials:**

Dry roasted peanuts  
Raisins  
Clear Soda Water Drinking Water  
2 clear drinking glasses for each student or group

### **Activity:**

Mix 1/2-cup dry roasted peanuts with 1/2-cup raisins. Add 1/2 of the mixture to each drinking glass. Fill the first glass 2/3 full of plain water. Fill the second glass 2/3 full of the clear soda water. Have students observe which objects float.

(In the plain water both peanuts and raisins will sink but in the soda water, the peanuts will float.)

### **Discussion:**

#### **Why does this work?**

The density of raisins and peanuts is greater than water, so they sink. In soda water, the bubbles attach to the peanuts and the overall density of this combination is less than water, so they float. Even with bubbles, the overall density of the raisins is greater than the water. Why is this application important to the minerals industry? Flotation is one of the methods used in the industry for extraction of contaminant minerals from coal. Frothers are added to the solution to lower the surface tension of the water. The froth must be strong enough to support the mineral but weak enough to break down in launders. Common frothers are alcohol and glycol.

### **Activities:**

Have the students experiment with other items such as beans or shell macaroni. Have students research other types of frothers for flotation.

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Are the results the same? What other items could be substituted? Have the students record the time frame that the peanuts float in the soda water. If fresh soda water is added, do the peanuts float again?

Adapted from materials provided by Women In Mining