

# Dancing sultanas

## Materials

- Tall beaker or glass
- Soda water
- Sultanas

## Instructions

1. Fill the beaker or glass with soda water.
2. Drop in a few sultanas and watch them 'dance'.



## What happens?

When a sultana is dropped into the soda water, at first it sinks to the bottom. Bubbles of carbon dioxide gas start to form on the outside of the sultana and when there is enough gas on the sultana, it floats to the top. The bubbles then pop and the sultana sinks back to the bottom.

Sultanas sink in water because they have a higher density than water. Density is the amount of mass in a given volume and it is a measure of how tightly packed matter is inside an object. A very dense object is heavy for its size whereas an object with low density is light for its size. When bubbles of gas stick to the sultana, the overall volume of the sultana plus the bubbles is bigger than the sultana, but the gas doesn't weigh very much. The sultana plus the bubbles float up to the top because their overall density, or average density, is lower than the density of water.

## Why does it matter?

Fizzy drinks like soda water contain dissolved carbon dioxide gas. When a can or bottle of gas is opened, some of the gas comes out of the liquid to form bubbles. A dissolved gas will form bubbles more readily on a bumpy or rough surface, such as the skin of a sultana. That is why sultanas work well for this activity, plus the fact that they are small and light enough for a few bubbles of gas to make them float.

Another way to make gas in fizzy drink form bubbles is to shake the bottle or can. This helps the bubbles form more quickly and can create a big fizzy mess.

### **Related activities**

Place a few sultanas in a glass of plain tap water to compare what happens. You might see a few bubbles on the surface of the sultanas, but there won't be enough gas to make them float.

Try some other types of food (e.g. uncooked rice or pasta, small pieces of fruit or vegetables): first test the food in water to make sure it sinks and then place it in soda water to see if the bubbles of gas will make it float.