

## How do bubbles form?

**The formation of bubbles is because in the presence of a soap the water has reduced surface tension**

### *Cohesion*

*Hydrogen atoms in a water molecule are attracted to oxygen atoms in another water molecule*

Soap molecules help the water molecules be more stretchy and flexible as when they are added they decrease the force of attraction of the water molecules

**The decrease of force is a decrease of the force of the surface tension**

The soap when added and also when glycerin is added into a bubble mix reduces the evaporation of water in the mix so that the bubbles last longer when formed than if they were just water bubbles

Air bubbles blown into a glass of water are small and don't last very long because of surface tension.

The water molecules surrounding the air bubbles attract each other, joining together.

## Have you ever washed dishes?

The dish-washing liquid you add into the water bubbles up as you scrub the dishes

The dish-washing liquid is added because it makes the water soapy which is better at cleaning dirty dishes than just water.

Soapy water helps with washing things like oil, dirt, grease and foods away because by reducing the surface tension of the water it allows it to mix easier with the oils, dirt, grease which means that it comes off the dishes easily

## Scientists refer to bubbles as minimal surface structures

This means that they always hold the gas or liquid inside of them with the least possible surface area.

## Why are bubbles always round?

They are round because of surface tension.

A force called surface tension pulls the soap film tight, so that it always has the minimum surface area possible.

The wall of the bubble will automatically make the shape with the least surface area it can.

The air molecules trapped inside the bubble experience a force from the air molecules outside the bubble.

The air bubbles inside try to cluster together into a shape that minimizes their contact with the outside air.

This creates a spherical shape

