

Technical Information:

Date: June 2006
Subject: Surface Tension
Topic : What is Surface Tension

Surface Tension is a term used to describe the phenomenon of what happens on the surface of a liquid.

Inside a liquid there are molecules which are attracted to each other in all directions by cohesive forces. The resultant forces being in equilibrium. On the surface of a liquid they are also attracted except from above, this creates a stronger attraction at the surface since they attract each other with this “extra “ force. This creates a film on the surface of the fluid. The attractive forces of the liquid molecules determines the surface tension of a fluid,

This surface tension is typically measured in units called dynes/cm, the force required to break a film of length 1 cm. A dyne is a unit of force.

Some typical values for liquids are :

Water at 20 Celsius 72.8 dynes/cm
Sodium Hypochlorite 74 dynes/cm
Mercury 465 dynes/cm
Alcohol approx 20 dynes/cm

This surface tension is what allows bugs to walk on the surface of water or the typical experiment of making a needle float on water etc.

In many cases it is desirable to reduce this surface tension in able to have some cleaning processes have a better penetration of the items to be cleaned, much like adding detergent to water for washing, the detergent reduces the surface tension of the water and allows it to penetrate the item and make it clean.

Chemicals that reduce the surface tension are referred to as Surfactants, soaps and detergents can be considered surfactants.