SURFACE TENSION

Surface tension is defined as he tensile force that acts on the surface of a liquid that is in contact with a gas or on the surface of two immiscible liquids such that the contact surface behaves like a membrane under tension.

The surface tension/surface energy per unit area is the force per unit length

The unit is N/m

For a liquid droplet, the pressure intensity, P is given by

P => Pressure Intensity

=> Surface tension

d = diameter of the droplet

Surface tension on a hollow bubble

Surface tension on a liquid jet

QUESTIONS

1. The surface tension of water in contact with air at 20C is . The pressure inside a droplet of water is to be greater than the outside pressure.

Calculate the diameter of the droplet of water

Solution:

where

Convert to =>

2. Find the surface tension in a soap bubble of 40mm diameter when the inside pressure is 2.5N/m^2 above atmosphere pressure

Solution

Using, where