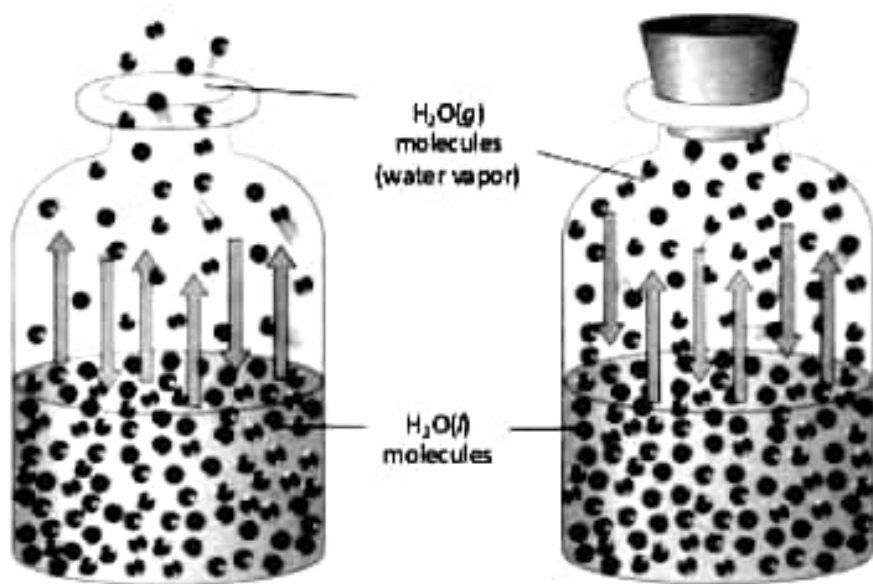


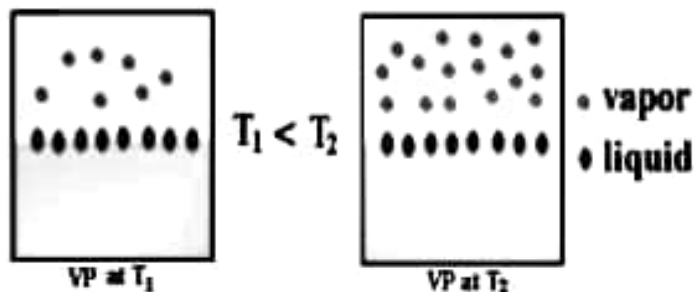
Vapour Pressure

- Vapour Pressure – the pressure exerted by a vapor in equilibrium with its liquid state.
- Liquid molecules at the surface escape into the gas phase.
- These gas particles create pressure above the liquid in a closed container.





- Vapour Pressure increases with increasing temperature.

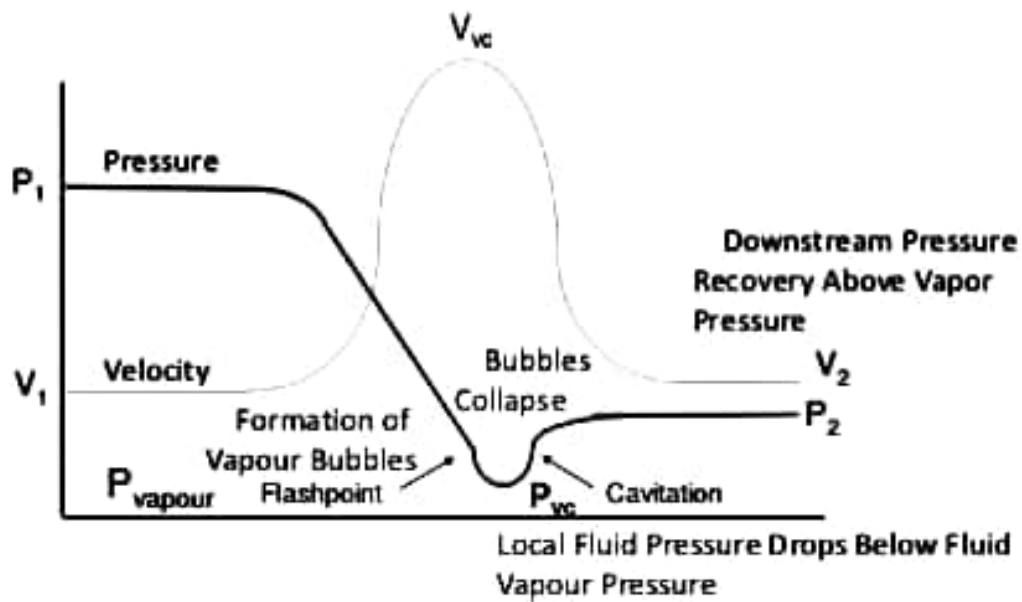


- As temperature increases, the amount of vapor generated by a liquid in a closed container increases.
- This occurs because as the liquid gains kinetic energy, the molecules can overcome the intermolecular forces of attraction that are prevalent in the liquid phase.

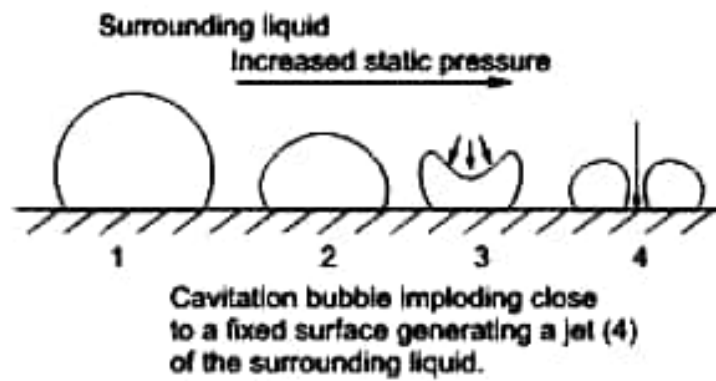
What is Cavitation?

- **Cavitation** is defined as the phenomenon of formation of vapor bubbles of a flowing liquid in a region where the pressure of the liquid falls below its vapour pressure.
- Cavitation is usually divided into two classes of behavior: inertial (or transient) cavitation and Incipient cavitation. **Inertial cavitation** is the process where a void or bubble in a liquid rapidly collapses, producing a shock wave.
- **Incipient cavitation** is the point at where cavitation begins, but has not reached a destructive state

Cavitation Phenomena



Bubble implosion



Valve Cavitation Damage

- **Pitting and erosion of exposed surfaces**
 - Accelerates valve wear
 - Increases maintenance and process down-time
- **Larger Scale Cavitation: potential catastrophic failure of valve body & pressure vessel walls**

