

Chemistry Study Materials for Class 9 (NCERT Based notes of Chapter -01)

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MATTER IN OUR SURROUNDINGS

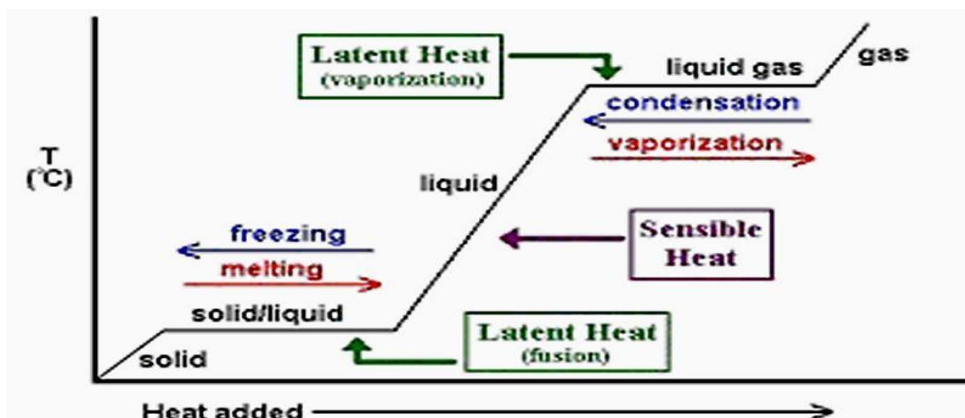
LATENT HEAT OF VAPORIZATION:

When liquid changes into gas because of rise in temperature, the heat required changing the state without rising in temperature is called the Latent Heat of vaporization.

The change of liquid to gaseous state is an endothermic reaction as heat is required in it. Let us take the example of boiling of water.

Water boils at 100°C . When heat is supplied to water temperature does not rise after 100°C even after continuous supply of heat. The heat supplied at this stage is used to change water into vapor and hence does not come into notice. The additional heat is required to change the water into vapor without coming into notice is the latent heat of vaporization.

- The latent heat of vaporization of water is the energy which is used to change the state of water (liquid) to vapor (gas).
- 22.5×10^5 J energy is required to convert 1 kilogram of water into vapor.
Hence, the latent heat of water is equal to 22.5×10^5 J per kilogram or it is written as 22.5×10^5 J/kg.
- Different liquid has different latent heat of vaporization.



SUBLIMATION:

The process in which a solid changes into vapor without changing into liquid and from vapor changes into solid without changing into liquid is known as sublimation.

Generally solid first changes into liquid and then changes into gas because of rise in temperature. But there are many substances, which change into gas without changing into liquid and changes into solid from gas without changing into liquid. Such substances, which go under sublimation, are known as sublime.

For example –

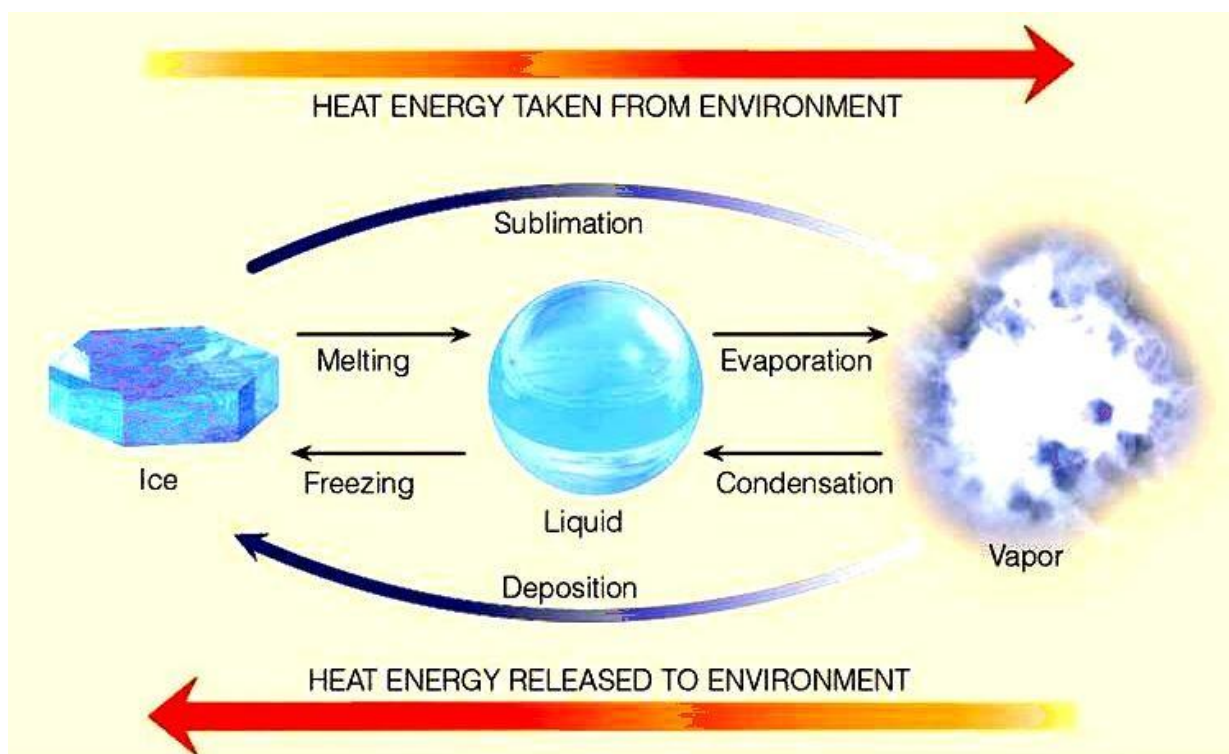
camphor, naphthalene balls, ammonium chloride, iodine, dry ice, etc.

The solid obtained after cooling of the gas of sublime is called Sublimate.

The process of cooling of vapor of sublime to get sublimate is also known as 'sublimation' although it is also known as deposition.

When camphor is heated it changes into vapor without changing into liquid.

When the vapor of camphor is cooled it changes into solid without changing into liquid.



SUBLIMATION IN EVERYDAY LIFE:

The dry ice (solid carbon dioxide) turns into vapor without changing into liquid and is considered as sublime. Because of this property dry ice is used to give the illusion of smoke or cloud on the stage in movies and stage shows.

Naphthalene balls are kept with cloths and documents to protect them from insects. Since naphthalene balls go under sublimation, hence it changes into vapor without changing into liquid and its vapor prevent the insects to come or stay in cloths or documents. This protects the documents and cloths to get destroyed.

We usually see that the size of naphthalene balls decrease gradually and finally disappeared when they are kept in open. This happens because of sublimation of naphthalene.

Naphthalene balls are used in toilets also as disinfectant and air freshener.

