 **Phoenix Learning Forever Class Notes**

Class 9th Sub: Chemistry Preparation: SA1 School Exams and Tests

**Matter in Our Surrounding** Curriculum: **CBSE**

* Anything which occupy space and has mass is called matter
* Earlier philosophers like Greek and Indian philosophers believe that Matter is *Pancha tatva,* i.e.
* *Jal* (Water)
* *Agni* (Fire)
* *Vayu* (Wind)
* *Aakash* (Sky)
* *Pruthvi* (Earth)
* Matter exists in 3 forms, Popularly known as three states of Matter i.e. Solids, Liquids and Gaseous state
* Matter has certain characteristics that are applicable to all matter. They are as follows
* Matter is compost of very Small particles called Molecules
* This particles have spaces between them called intermolecular spaces
* This particles attract each other with a force called intermolecular force
* Particles of matter (Molecules) possess kinetic energy Note: - Kinetic Energy of Molecules increases if the temperature increases.
* Although All matter have this characteristics; Solids, Liquids and Gases are different from each other
* Solids have certain characteristics, They are as follows:
* Solids have fixed shape
* Solids have fixed volumes
* Solids have high density
* Particles in Solids can only vibrate (Least Kinetic Energy)
* Particles in Solids have high intermolecular Force
* Intermolecular Space is least between particles of Solids
* Solids are incompressible
* Solids are very rigid
* Solids have least thermal expansion
* Solids do not diffuse
* Solids cannot flow (Not considered as Fluids)
* Liquids have certain characteristics, They are as follows:
* Liquids have no fixed shape
* Liquids have fixed volume
* Liquids have low density
* Particles in liquid can move around (Low Kinetic Energy)
* Particles in Liquid have less intermolecular Force
* Intermolecular Space is moderate between particles of Liquids
* Liquids are slightly compressible
* Liquids are less rigid
* Liquids have moderate thermal expansion
* Liquids can diffuse
* Liquids can flow (Considered as Fluids)
* Gases have certain characteristics; They are as follows:
* Gases have no fixed shape
* Gases have no fixed volume
* Gases have least density
* Particles in Gases can move around freely (Very High Kinetic Energy)
* Intermolecular Space between particles of Gases is high
* Gases are highly compressible
* Gases are not rigid
* Gases has high thermal Expansion
* Gases can diffuse easily
* Gases can flow (Considered as Fluids)
* Gases have least intermolecular force
* Matter can change its state on increasing its temperature and vice versa, Let us see some important phenomenon on heating the Matter

1. Melting: When solid is subjected to heating, the particles in matter absorb the heat energy to increase its kinetic energy thus, increasing temperature. Once the phrase transition starts further heat supply do not increase the temperature rather it helps in overcoming the force of attraction and change the molecular pattern from solid to Liquid. This phenomenon is known as Melting. The temperature in which melting occurs is called Melting Point of that particular substance.
2. Boiling: When the liquid is subjected to heating, the molecules absorb the heat energy to increase its kinetic energy thus increasing its temperature; once the phrase transition starts no further heat energy will increase its temperature rather it will help in overcoming the force of attraction between particles, this change the molecular pattern from Liquid to Gases. This phenomenon is called Boiling or Fusion. The temperature in which fusion occurs is called boiling point of that particular substance

* Cooling can also change the state of Matter, Let’s see some important phenomenon based on cooling

1. Vaporisation: When the gas is subjected to cooling, the molecules absorb it to decrease its Kinetic energy thus decreasing its temperature, once the phrase transition starts further cooling helps in increasing the force of attraction between molecules thus changing the molecular pattern of gas to liquid. This phenomenon is known as Vaporisation
2. Solidification: When the liquid is subjected to cooling, the molecules absorb it to decrease its Kinetic energy thus decreasing its temperature, once the phrase transition starts further cooling helps in increasing the force of attraction between molecules thus changing the molecular pattern of Liquid to Solid. This phenomenon is known as solidification.

* When we heat some substance like iodine, Naphthalene in solid form, it change directly into gaseous state without changing into Liquid state, this phenomenon is called Sublimation. Gas also changes into solid on cooling, It is known as Sublimation
* If the gas is compressed highly than it can change into liquid, i.e. Gas can change it state when pressure is increased.
* Let’s see the diagram of Change in State of Matter
* Measurement of Temperature: It is very important to measure temperature, mostly in our day to day life we measure temperature in oC (Degree Celsius), but it is not S.I. Unit to measure temperature. The S.I. Unit of temperature is K (Kelvin). Our Body temperature is 36oC. To convert oC into Kelvin just follow this:
* (Temperature in K)=273+(Temperature in oC)
* Evaporation: The process of conversion of Liquid to gas due to escaping of particles from liquid surface even below its boiling point is called Evaporation.
* Evaporation is Surface Phenomenon
* Rate of Evaporation depends on following factors
* Temperature
* Surface Area
* Humidity
* Wind
* Rate of Evaporation is directly proportional to temperature, i.e. More the temperature means more the rate of Evaporation
* Rate of Evaporation is directly proportional to Surface Area, i.e. More the Surface Area means more the rate of Evaporation
* Rate of Evaporation is inversely proportional to Humidity, i.e. More the Humidity means less the rate of evaporation
* Rate of Evaporation is directly proportional to Wind, i.e. More the Wind means More the rate of Evaporation
* Another Importance of Evaporation is Cooling Effect; Evaporation causes cooling sensation on the contacted surface. Evaporation needs latent heat to increase kinetic energy of particles and to escape; it takes heat from the contacted surface and provides cooling sensation to surface.

C:\Program Files\Microsoft Office\MEDIA\OFFICE12\Lines\BD21303_.gif



For Any Suggestions, Query or Feedback, You can mail me at [b.pritam.2222@gmail.com](mailto:b.pritam.2222@gmail.com)

ALL THE BEST!!!

(A division of Apsara’s Educational Services)

Phoenix Central Branch-DLA (Distance Learning Association)

By *Pritam Banerjee and Phoenix Tutor’s Team*