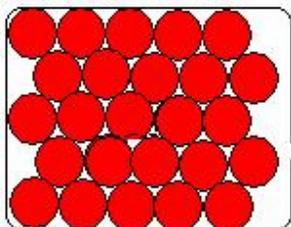
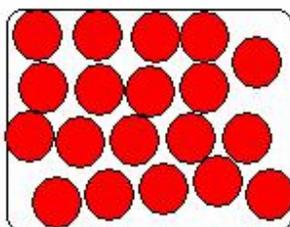


Introduction

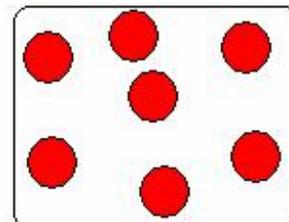
There are three physical states of matter, which are solid, liquid, and gas. These three states on molecular level look like,



Solid



Liquid



Gas

Gaseous state is characterized by the following physical properties.

- Gases do not have their own shapes and sizes; they assume the shapes and volumes of their containers.
- Gases have high compressibility.
- Gases have much lower densities than solids and liquids.
- Gases have high mixability.

Comparing these three states, you can see that the gaseous state is thinner and without its unique structural properties, we will not be able to move or walk around in air as freely as we do now. As a matter of fact, our planet is covered with 3/4th gas, namely, the air. The gaseous state of matter is very important because we live in the ocean of air (mixture of gases) that is composed of roughly 78% nitrogen gas (N₂), 21% oxygen gas (O₂), and 1% other gases that includes carbon dioxide (CO₂) by volume. The atmosphere (layer of gases) surrounding the earth protects life on Earth by absorbing ultraviolet solar radiation and reducing temperature extremes between day and night.

Gaseous Substances

Out of the entire string of elements in the periodic table, only 11 elements exist in gaseous forms under normal atmospheric conditions (25⁰ C and 1 atmospheric pressure). These are listed in the first column of the following table.

Some Substances in Gaseous form at 25⁰ C and 1 atm	
Elements	Compounds
Molecular forms	Hydrogen fluoride (HF)
1. Hydrogen (H ₂)	Hydrogen chloride (HCl)

2. Nitrogen (N ₂)	Hydrogen bromide(HBr)
3. Oxygen (O ₂)	Hydrogen iodide (HI)
4. Ozone (O ₃)	Carbon monoxide(CO)
5. Fluorine (F ₂)	Carbon dioxide(CO ₂)
6. Chlorine (Cl ₂)	Ammonia (NH ₃)
Monatomic form	Nitric oxide (NO)
1. Helium (He)	Nitrogen dioxide (NO ₂)
2. Neon (Ne)	Nitrous oxide (N ₂ O)
3. Argon (Ar)	Sulfur dioxide(SO ₂)
4. Krypton (Kr)	Hydrogen sulfide (H ₂ S)
5. Xenon (Xe)	
6. Radon (Rn)	

In addition, there are few compounds that also exist in gaseous forms (see the second column in the above table).