

8th Standard- Science

Materials-Metals and Non-Metals

Physical Properties of Metals:

Metals are:

- hard to touch.
- lustrous i.e., freshly Cut surfaces of metals have characteristic shining.
- malleable; the property of metals by which they can be beaten into thin sheets is called malleability.
- ductile; the property of metal by which it can be drawn into wires is called ductility.
- sonorous i.e., metals produce ringing sound when struck on a hard surface.
- Good conductors of heat and electricity.

Metals like sodium and potassium are soft and can be cut with a knife.

Mercury is the only metal which is found in the liquid state at room temperature.

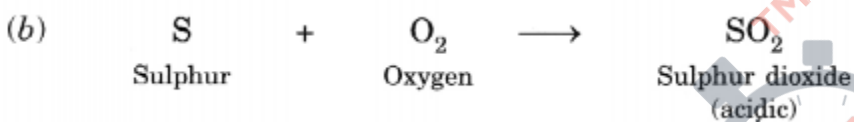
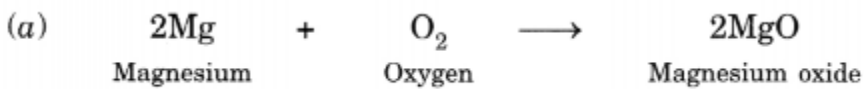
Physical Properties of Non-metals:

- Non-metals are soft and dull (e.g., coal and sulphur).
- Non-metals are generally brittle, i.e., they break down into a powdery mass on tapping with a hammer.
- They are not sonorous.

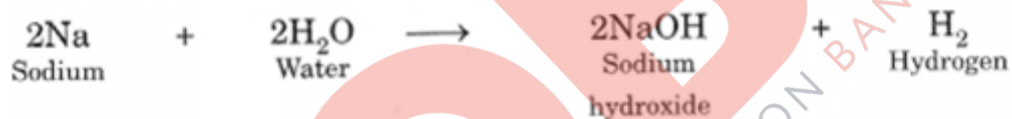
- They are poor conductors of heat and electricity.

Chemical Properties of Metals and Non-metals:

Reaction with Oxygen: Both metals and non-metals when burnt in oxygen form their oxides. Oxides of metals are basic in nature while that of non-metals are generally acidic in nature e.g.,



Reaction with Water: Some metals react with water to produce metal hydroxide and hydrogen gas. Generally, non-metals do not react with water.



Reaction with Acids: Metals react with dil. acids and produce metal salt and hydrogen gas. Generally, non-metals do not react with dil. acids.

Reaction with Bases: Metals react with bases to produce hydrogen gas.

Displacement Reaction: More reactive metals displace less reactive metals from their metal compounds in aqueous solutions.

Uses of Metals and Non-metals

- Metals are used in making machinery automobiles, aeroplanes. trains, satellites, industrial gadgets, cooking utensils, water boilers etc.
- Non-metals are also used in day-to-day life. Some examples are:
 - oxygen is essential for life.
 - nitrogen, phosphorus and potassium are used as fertilizers.
 - chlorine is used as a water purifier.

Atom: Atom is the smallest particle of matter which cannot be divided further by any physical means. Atoms are the basic units from which molecules and ions are formed.

Conductor: Substances which allow heat/electricity to pass through them are called conductors of heat/electricity

Displacement reaction: More reactive metals displace less reactive metals from their compounds in aqueous solutions.

Ductility: The property of metals by which they can be drawn into wires is called ductility

Elements: Substances whose molecules contain only one type of atoms are known as elements.

Hardness: Metals are hard, on the other hand, non-metals are generally brittle.

Malleability: The property of metals by which they can be beaten into thin sheets is called malleability.

Metals: The materials which are generally hard, lustrous, malleable, ductile, sonorous and good conductors of heat and electricity are called metals

Metalloids: Elements which possess characters of both metals and non-metals are called metalloids.

Non-metals: Materials which are soft, dull in appearance, brittle, not sonorous and poor conductors of heat and electricity are called non-metals.

Sonorous: Metals are called sonorous because they produce a specific ringing sound.

