

Study Notes: CBSE Class 8th Physics (Metals and Non-metals)

Contents

- Metals and non-metals.
- Chemical Properties.
- Uses of metals and non-metals.
- Metals are the elements that conduct heat and electricity and are malleable and ductile. Metals are also lustrous (Shiny) , hard, strong heavy and sonorous (which make ringing sound when struck). Some of the examples of metals are Iron, Aluminium, Copper, Mercury, Zinc, Tin, Lead, Gold, and Platinum etc.

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

- Non-metals are the elements that do not conduct heat and electricity and are neither malleable nor ductile. They are brittle. Non-metals are not lustrous; these are generally soft, and not strong. E.g. Carbon, Oxygen, Hydrogen, Nitrogen. Chlorine, Bromine etc. Non-metals are bad conductor of heat and electricity. Plastics and wood protects from being hurt while handling hot things.
- The property of metal by which it can be drawn into wires is called **ductility**

Note Metals like Sodium and Potassium are soft and can be cut with a knife. Mercury is the only metal which is found in liquid state at room temperature
Chemical properties of metals and non-metals.

- Metal reacts with oxygen to give metal oxide. Rusting of iron is an oxidation reaction, which is takes place as



Burning of magnesium ribbon in air is also an example of oxidation.

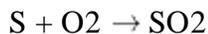
- When a copper vessel is exposed to moist air for long, it acquires a dull green coating. The green material is a mixture of copper hydroxide and copper carbonate.



In general metallic oxides are basic in nature, thus solution of metallic magnesium ribbon ash turns red

litmus paper into blue.

- The name of the product formed in the reaction of sulphur and oxygen is sulphur dioxide.



1. When Sulphur dioxide is dissolved in water Sulphurous acid is formed. The reaction can be given as follows-



Sulphurous acid turns blue litmus paper red. Generally oxides of non-metals are acidic in nature.

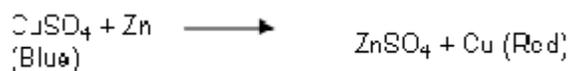
2. Sodium metal is very reactive. It reacts vigorously with oxygen and water. A lot of heat is generated in the reaction. It is therefore, stored in Kerosene.

- Generally non-metals do not react with water though they may be very reactive in air. Such non-metals are stored in water E.g. Phosphorous.

3. Non-metals generally do not react with acids but metals react with acids and produce hydrogen gas that burns with a "pop" sound. **Note:** Copper does not react with dilute hydrochloric acid even on heating but it reacts with sulphuric acid.

4. Metals react with sodium hydroxide to produce hydrogen gas. Reactions of metals with bases are complex.

5. Metal displaces another metal from its compound in aqueous solution. Zn(Zinc) replace Copper (Cu) from copper sulphate. That is why the blue colour of copper sulphate disappears. And a powdery red mass of copper is deposited at the bottom of the beaker. The reaction can be represented as follows



- A more reactive metal can replace a less reactive metal. But a less reactive metal can't replace a more reactive metal.

Uses of metals and non-metals-

- Metals are used in making machinery, automobiles, industrial gadgets, cooking utensils, water boilers etc. Silver foil used for decorating sweets while aluminium foil used for wrapping food. The use of some non-metals are as follows-

- Non-metals used in fertilizers to enhance the growth of plants.

- Non-metals used in crackers.
- Non-metals used in water purification process.
- Non-metals used in the purple coloured solution which is applied on wounds as an antiseptic.

Points to Remember

- Generally metals are malleable and ductile.
- With oxygen metals produce metal oxides which are basic in nature.
- Metals are lustrous whereas non-metals have no lustre.
- Metals react with acids and bases to produce hydrogen gas.
- Metals and non-metals are used widely in every day life.