

CHEMISTRY STUDY MATERIALS FOR CLASS 10

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Chapter- 3 (Metals and Non-metals- Revision Notes)

Corrosion:-

Metals are attacked by substances in surroundings like air, moisture and acids.

Silver - it reacts with sulphur in air to form silver sulphide and articles become black.

Copper - reacts with moist carbon dioxide in air and gains a green coat of copper carbonate.

Iron- acquires a coating of a brown flaky substance called rust. Both air and moisture are necessary for rusting of iron.

Rust is hydrated Iron (III) oxide i.e. $\text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O}$

Prevention of Corrosion:-

Rusting of iron is prevented by painting, oiling, greasing, galvanizing, chrome plating, anodizing and making alloys.

In galvanization, iron or steel is coated with a layer of zinc because oxide thus formed is impervious to air and moisture thus protects further layers from corrosion.

Alloys: These are homogeneous mixture of metals with metals or non-metals. Adding small amount of carbon makes iron hard and strong.

Some examples of alloys are following;

1. Steel: Hard Iron and carbon. Used for construction of roads, railways, other infrastructure, appliances
2. Stainless steel: Hard Rust Free Iron, nickel and chromium. Used in utensils.
3. Brass: Low electrical conductivity Copper and zinc. used for decoration for its bright gold- like appearance and in locks, gears ,plumbing and electrical appliances.
4. Bronze: than pure metal Copper and tin, used to make coins, springs, turbines and blades.
5. Solder : Low MP, used to weld wires Lead and tin. used to create a permanent bond between metal work pieces
6. Amalgam :Used by dentists. Mercury and any other metal

What you have learnt

- Elements can be classified as metals and non-metals.
 - Metals are lustrous, malleable, ductile and are good conductors of heat and electricity. They are solids at room temperature, except mercury which is a liquid.
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- Metals can form positive ions by losing electrons to non-metals.
 - Metals combine with oxygen to form basic oxides. Aluminium oxide and zinc oxide show the properties of both basic as well as acidic oxides. These oxides are known as amphoteric oxides.
 - Different metals have different reactivities with water and dilute acids.
 - A list of common metals arranged in order of their decreasing reactivity is known as an activity series.
 - Metals above hydrogen in the Activity series can displace hydrogen from dilute acids. A more reactive metal displaces a less reactive metal from its salt solution.
 - Metals occur in nature as free elements or in the form of their compounds.
 - The extraction of metals from their ores and then refining them for use is known as metallurgy.
 - An alloy is a homogeneous mixture of two or more metals, or a metal and a non-metal. The surface of some metals, such as iron, is corroded when they are exposed to moist air for a long period of time. This phenomenon is known as corrosion.
 - Non-metals have properties opposite to that of metals. They are neither malleable nor ductile. They are bad conductors of heat and electricity, except for graphite, which conducts electricity.
 - Non-metals form negatively charged ions by gaining electrons when reacting with metals.
 - Non-metals form oxides which are either acidic or neutral.
 - Non-metals do not displace hydrogen from dilute acids. They react with hydrogen to form hydrides.
