

# CHEMISTRY STUDY MATERIALS FOR CLASS 10

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

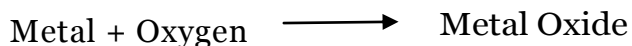
- About 118 elements are known today. There are more than 90 metals, 22 non metals and a few metalloids.
- Sodium (Na), potassium (K), magnesium (Mg), aluminium (Al), calcium (Ca), Iron(Fe), Barium(Ba) are some metals.
- Oxygen(O), hydrogen(H), nitrogen(N), sulphur(S), phosphorus(P), fluorine(F), chlorine(Cl), bromine(Br), iodine(I) are some non-metals.

	Metals		Non-metals
1.	Generally solid except Hg (present in liquid form).	1.	Can be solid, liquid or gases e.g., C is solid, Br (liq), H (gas)
2.	Ductile, Malleable (drawn into wires) (beaten into sheets)	2.	Non-ductile, non-Malleable
3.	Sonorous (produces sound)	3.	Non-sonorous
4.	Lustrous (have natural shine)	4.	Non-lustrous except Iodine.
5.	High Melting Point except Ce and Ga	5.	Lower M.P. than metals.
6.	Generally good conductors of heat and electricity except Pb and Hg.	6.	Bad conductors of heat and electricity except Graphite (form of C)
7.	High density except Na and K	7.	Low densities except Diamond (form of C)
8.	Reactive	8.	Not very reactive.
9.	Ionic bonding is present,	9.	Covalent/Hydrogen bonding is present

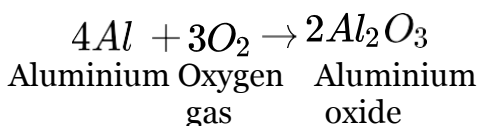
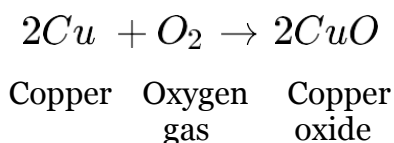
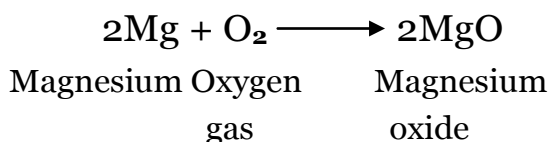
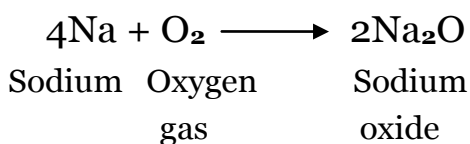
- Metals form basic oxides e.g., Magnesium oxide (MgO), while non-metals form acidic oxides e.g.,  $SO_2$ ,  $CO_2$ .
- Ag and Cu are best conductors of electricity.
- Metals and Non-metals can be distinguished on the basis of their physical and chemical properties.
- Some elements show the properties of both metals and non-metals and are called metalloids.

## Chemical Properties of Metals Reaction with air:

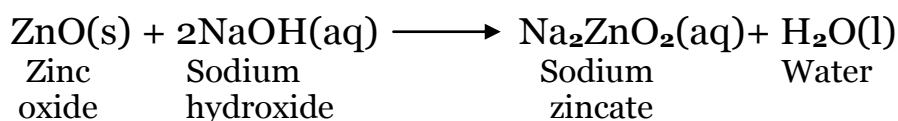
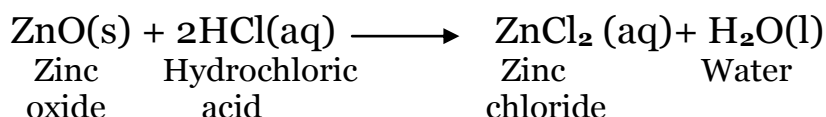
Different metals show different reactivities towards oxygen present in air.



- Some metals like Na and K are kept immersed in kerosene oil as they react vigorously with air and catch fire.
- Some metals like Mg, Al, Zn, Pb react slowly with air and form a protective layer.
- Mg can also burning air with a white dazzling light to form its oxide
- Fe and Cu don't burn in air but combine with oxygen to form oxide. Iron filings burn when sprinkled over flame.
- Metals like silver, platinum and gold don't burn or react with air.



Usually metal oxides are basic in nature, but some metal oxides show both acidic and basic nature. Amphoteric oxides: metal oxides which react with both acids as well as bases to form salt and water e.g.  $\text{Al}_2\text{O}_3$ ,  $\text{ZnO}$ .



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