

s-Block Elements

Physical properties of s-block elements

Physical State

ALKALI METAL	ALKALINE EARTH METAL
- One electron in outermost shell & General formula ns^1 - Francium is radioactive element. - All are silvery white - Light soft, malleable and ductile metals with metallic luster. - Alkali metals are paramagnetic and colorless in form of ions.	- Two electrons in outer most shell & General formula ns^2 - Radium is radioactive element. - All are grayish white. - These metals are harder than alkali metals. - These are diamagnetic and colorless in form of ions or in metal states.

Atomic Size

ALKALI METAL	ALKALINE EARTH METAL
- Biggest in their respective period (except noble gas element) - Size increases from Li to Fr due to addition of an extra shell. $Li < Na < K < Rb < Cs < Fr$	- Smaller than IA group elements, since extra charge on nucleus attracts the electron cloud. - Size increases gradually from Be to Ra. $Be < Mg < Ca < Sr < Ba$ In s-block elements : Be is the smallest, Cs is the biggest

Formation of amalgam

ALKALI METAL	ALKALINE EARTH METAL
- Alkali metals give amalgam with Hg. - These metals react with other metals to give mixed metals (alloys)	Shows same properties.

Sulphates

ALKALI METAL	ALKALINE EARTH METAL
- Alkali metals forms M_2SO_4 type sulphates. - All alkali metal sulphates are ionic. Ionic properties increase from Li to Cs. $Li_2SO_4 < Na_2SO_4 < K_2SO_4 < Rb_2SO_4 < Cs_2SO_4$ Li_2SO_4 is least soluble in water. - These sulphates on burning with C forms sulphides $M_2SO_4 + 4C \longrightarrow M_2S + 4CO$ - Except lithium, sulphates of IA group reacts with sulphates of trivalent metals like Fe^{+3}, Cr^{+3}, Al^{+3} etc. gives double salts called alum. I III $M_2SO_4.M_2(SO_4)_3.24H_2O$	- Alkaline earth metals forms MSO_4 type sulphates. - Ionic nature of alkaline metal sulphates increased from Be to Ba. $BeSO_4 < MgSO_4 < CaSO_4 < SrSO_4 < BaSO_4$ - Solubility decreases from $BeSO_4$ to $BaSO_4$ as Be^{+2} and Mg^{+2} are of small size so their hydration energy is high Hydration Energy > Lattice Energy - Order of solubility – $BeSO_4 > MgSO_4 > CaSO_4 > SrSO_4 > BaSO_4$ - Order of thermal stability – $BeSO_4, MgSO_4, CaSO_4, SrSO_4, BaSO_4 \rightarrow$ - Ionic nature increases - Thermal stability increases