

9. s-BLOCK ELEMENTS

BULLET MASTER'S CHEM BEATS!

IPE VIEW: [2VSAQ]

s-Block → **Starting Block** of the Periodic Table.

s-Block → **Shiny, Soft, Silvery**, Super reactive elements.

s-Block → Soft and natural Metal Block [Li, Na, K are so soft metals that you can cut with a knife].

s-Block → **First Group:** G1-Alkaline Metals (except H); Chemically very active (Fr is hyperactive).

s-Block → **Second Group:** G2-Alkaline Earth Metals .

s-Block → Starting with **Super Seven Floor Leaders**[H, Li, Na, K, Rb, Cs, Fr]

s-Block → H'bad Lo Naku Ruby, Charlie Friends; Hi Li na Ki Rubina Close Friend;

s-Block → Group 1 Tops with 'Happy Hydrogen' and ends with 'Big Boss Francium'.

s-Block → Contains Liliput, Little Baby boy Li; Li-ion batteries are used in our Phones, Cars.

s-Block → Contains Big Size Big Boss, Father like Francium (Highest Electropositive).

s-Block → Shhh....గమనించారా!... G1, G2 Elements అన్నీ 'ium' తోనే అంతం అవుతాయి ఒక **H** తప్ప.

s-Block → Simply lose Electrons to form Positive ions like H^+ , Li^+ , Na^+ , K^+ , Mg^+

s-Block → Valence electrons of s- block are in s-orbital.

s-Block → Group 1 elements give 1 electron to their companions.

s-Block → Group 1 form alkalines (bases) that react with water to form NaOH, KOH.

s-Block → Group 2 elements give 2 electrons to their companions.

s-Block → Group 2 begins with best Beryllium and ends with rocking Radium.

s-BLOCK	
1	
1s	H
2s	Li Be
3s	Na Mg
4s	K Ca
5s	Rb Sr
6s	Cs Ba
7s	Fr Ra

d-BLOCK											
3											
3d	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	
4d	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	
5d	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	
6d	Ac	Rf	Db	Sg	Bh	Hs	Mt	Ds	Uuu	Uub	

p-BLOCK						18				
13						14	15	16	17	He
2p	B	C	N	O	F	Ne				
3p	Al	Si	P	S	Cl	Ar				
4p	Ga	Ge	As	Se	Br	Kr				
5p	In	Sn	Sb	Te	I	Xe				
6p	Tl	Pb	Bi	Po	At	Rn				
7p	-	Uuq	-	Uuh	-	-				

f-BLOCK														
4f														
	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
5f														
	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Ml	No	Lr

STUDY NOTES

IA		IIA
H		
Li	Be	
Na	Mg	
K	Ca	
Rb	Sr	
Cs	Ba	
Fr	Ra	

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H		
Li	Be	
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Fr	Ra	

ALKALI METALS

Lithium (Li), Sodium (Na), Potassium (K),
Rubidium (Rb), Caesium (Cs) and Francium (Fr)

Alkalis are water soluble bases

GEC: ns^1 ; **Oxidation state:** +1

Most abundant Alkali metal is Sodium

Least available Alkali is Radio active Francium

Alkali metals are highly **reactive**.

Alkali metals are highly **electropositive** and good **reductants**.

Hydroxides of Alkali metals are water soluble and the solutions are **strong alkalis**.

Alkali metals usually form **Ionic compounds**.

Preparation of Sodium (Na)

- (i) Electrolysis of fused **NaOH** in **Castner's process**.
- (ii) Electrolysis of fused **NaCl** in **Down's process**.

Caustic soda is Sodium hydroxide (NaOH)

Sodium Hydroxide (NaOH) is prepared by Electrolytic process in **Nelson cell**

Soda ash- Anhydrous Na_2CO_3 is prepared by Solvay-Ammonia Soda process.

Washing soda is $Na_2CO_3 \cdot 10H_2O$

Baking soda is $NaHCO_3$

ALKALINE EARTH METALS

Beryllium (Be), Magnesium (Mg), Calcium (Ca), Strontium (Sr), Barium (Br), Radium (Ra)

GEC : ns^2 ; **Oxidation state:** +2.

Be forms Covalent compounds.

Alkaline earth metals are also very **reactive**.

Alkaline earth metals are Harder than Alkali metals.

Alkaline earth metals are **Malleable, Ductile** and **Good conductors** of electricity.

Magnesium is extracted by the electrolysis of fused $MgCl_2$.

Alkyl Magnesium Halides are known as **Grignard reagents**. $(RMgX)(CH_3MgCl)$

Epsom salt is Magnesium sulphate heptahydrate $(MgSO_4 \cdot 7H_2O)$.

Milk of magnesia is a suspension of $Mg(OH)_2$ in water.

Mortar is a mixture of lime, sand and water.

Lime Mortar is a mixture of 1 part of slaked lime, 3 parts of sand and water.

Gypsum is Calcium sulphate di hydrate $CaSO_4 \cdot 2H_2O$

Plaster of Paris is Calcium sulphate semi hydrate $CaSO_4 \cdot (1/2) H_2O$.

Electro positive character (hence, Reducing ability) of Alkaline earth metals is less than Alkali metals

Alkaline earth metals (except Be) form **Ionic compounds**.

Oxides of Alkaline earth metals are thermally very stable and are basic in nature