

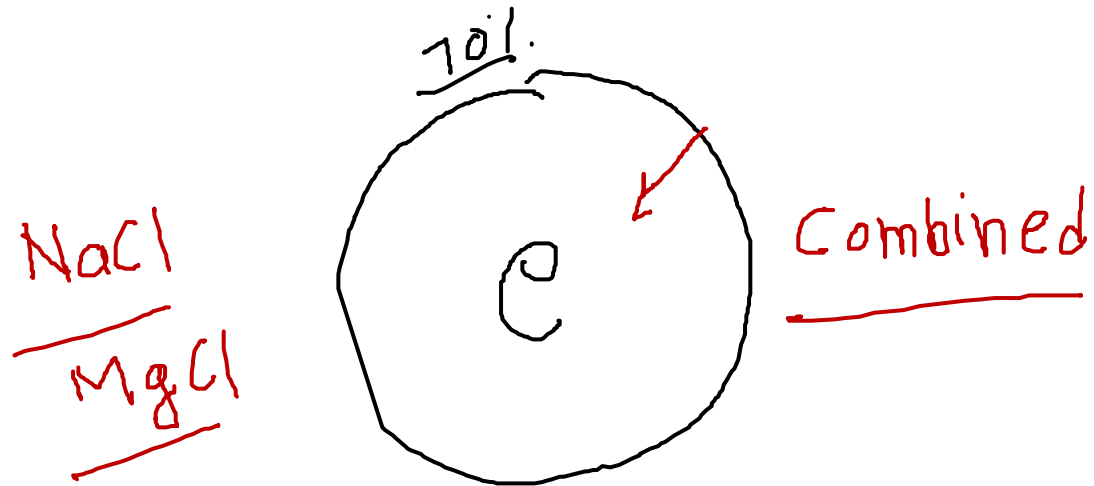
✓ metal ✓

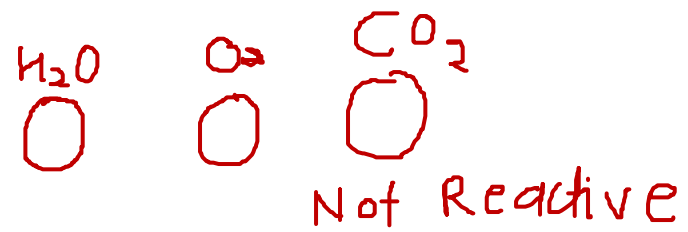


# SAFALTA CLASS<sup>TM</sup>

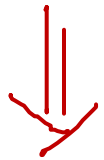
An Initiative by **अमरउजाला**

# SOURCE OF METALS






Not Reactive  
Gold (मेरा)



Free State  
 Pure form



Sodium (Na)  


Combined form

# Important Mineral and Ores

ଉପାଦାନ

ଉପାଦାନ

**MINERAL** : A mineral is a Natural substance as coal, Salt, Oil etc specially one that is found in the ground

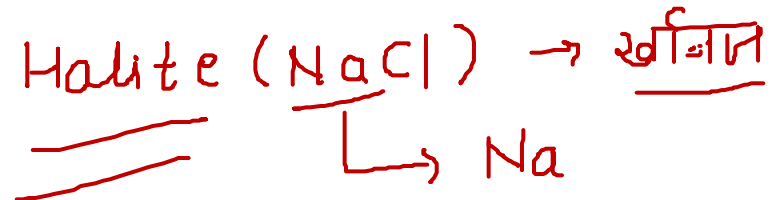
କାଠ, ଲୁଗା,

Some minerals also present in food and drink and are very important for good health

Elements found in earth in the form of minerals

## • For Example

1. Halite से Na, Halite commonly Known as rock salt is a type of salt, the mineral natural form of sodium chloride (NaCl)



2. Al<sub>2</sub>O<sub>3</sub>.xH<sub>2</sub>O (hydrated aluminum oxide) Bauxite से Aluminium

- Earth is the main source of minerals and ores. Most elements are not found independently due to their reactive tendencies.
- Potassium (K) Sodium (Na) Calcium (Ca) Magnesium (Mg) Aluminum (Al) Zinc (Zn) Iron (Fe) Lead (Pb), etc. metals are found in the compound form.
- Mineral is natural material. In which metals and their compounds are found in the earth.

# पृथ्वी की भूपटल (EARTH'S CRUST) में धातुओं की प्रचुरता

अधातु		उपधातु (metalloid)	
1. Oxygen	46.6%	2. Silicon	27.7%
3. Aluminum	8.1 %	4. Iron	5%
5. Calcium	3.6%	6. Sodium	2.8%
7. Potassium	2.6%	8. Magnesium	2.1%

# ORES

- Ores are that minerals from which we can found or extract economically and valuable metal.

↗



## अयस्क के कुछ मुख्य रूप

### 1. Oxide Ore ✓✓

⇒ ऑक्साइड अयस्क से Al, Cu, Fe, Sn निकाले जाते हैं

### 2. Carbonate Ore

⇒ कार्बोनेट अयस्क से Ca, Zn, Fe निकाले जाते हैं

### 3. Sulphide Ore


⇒ सल्फाइड से Zn, Cu, Pb, Hg जस्ता तांबा लेड पारा

### 4. Halide Ore

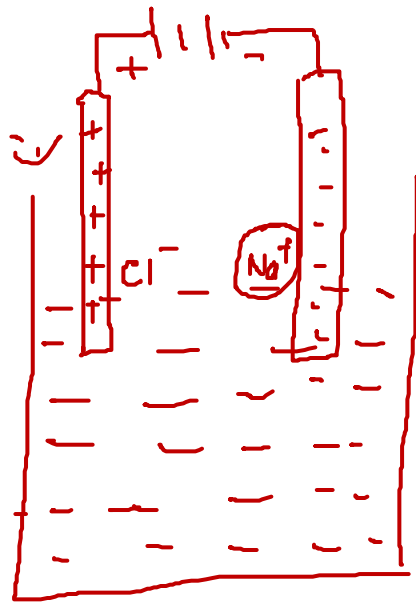
⇒ हैलाइड अयस्क से सोडियम, फ्लोराइड चांदी निकाले जाते हैं

⇒ 5. Sulphate ore सल्फेट अयस्क

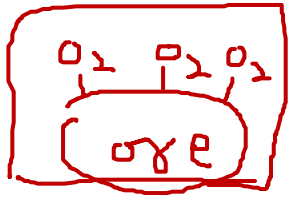
# Reactivity series of metals

 <p>Most reactive</p> <p>Increasingly reactive</p> <p>Least reactive</p>	K	Potassium	}	<b>Extract by electrolysis</b>
	Na	Sodium		
	Ca	Calcium		
	Mg	Magnesium		
	Al	Aluminium		
	<b>C</b>	<b>Carbon</b>	}	<b>Extract by carbon reduction</b>
	Zn	Zinc ✓		
	Fe	Ferum ✓		
	Sn	Tin ✓		
	Pb	Lead ✓		
	Cu	Copper ✓	}	<b>Heating <u>directly</u> <u>in air</u></b>
	Hg	Mercury ✓		
	Ag	Silver ✓		<b>Found as natural element</b>
	Au	Gold ✓		

① NaCl



⇒ molten form



oxide

Roasting

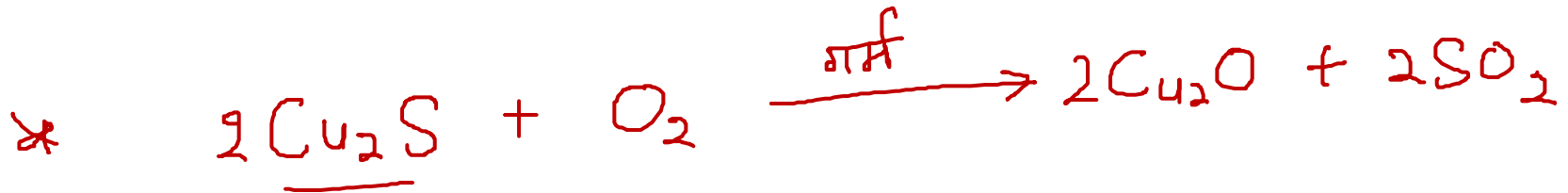
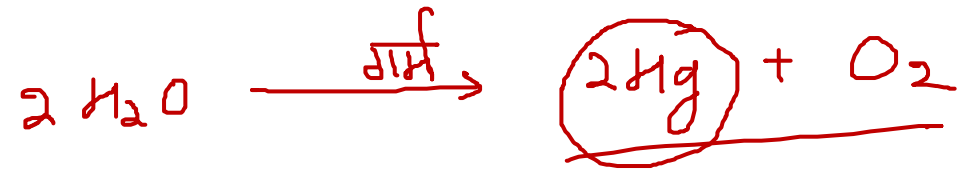
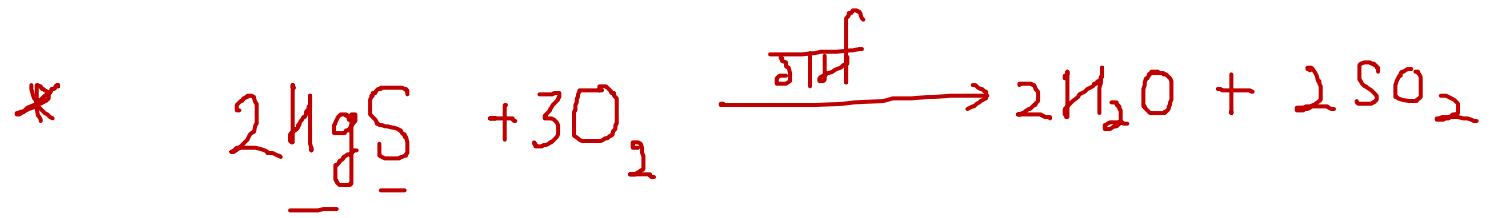
ore

② Calcination



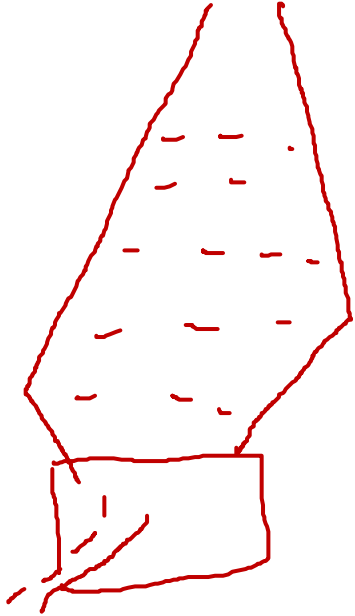
oxide  $\xrightarrow{\text{heat}}$  metal

ore  $\longrightarrow$  oxide  $\xrightarrow{\text{ref}}$  metal



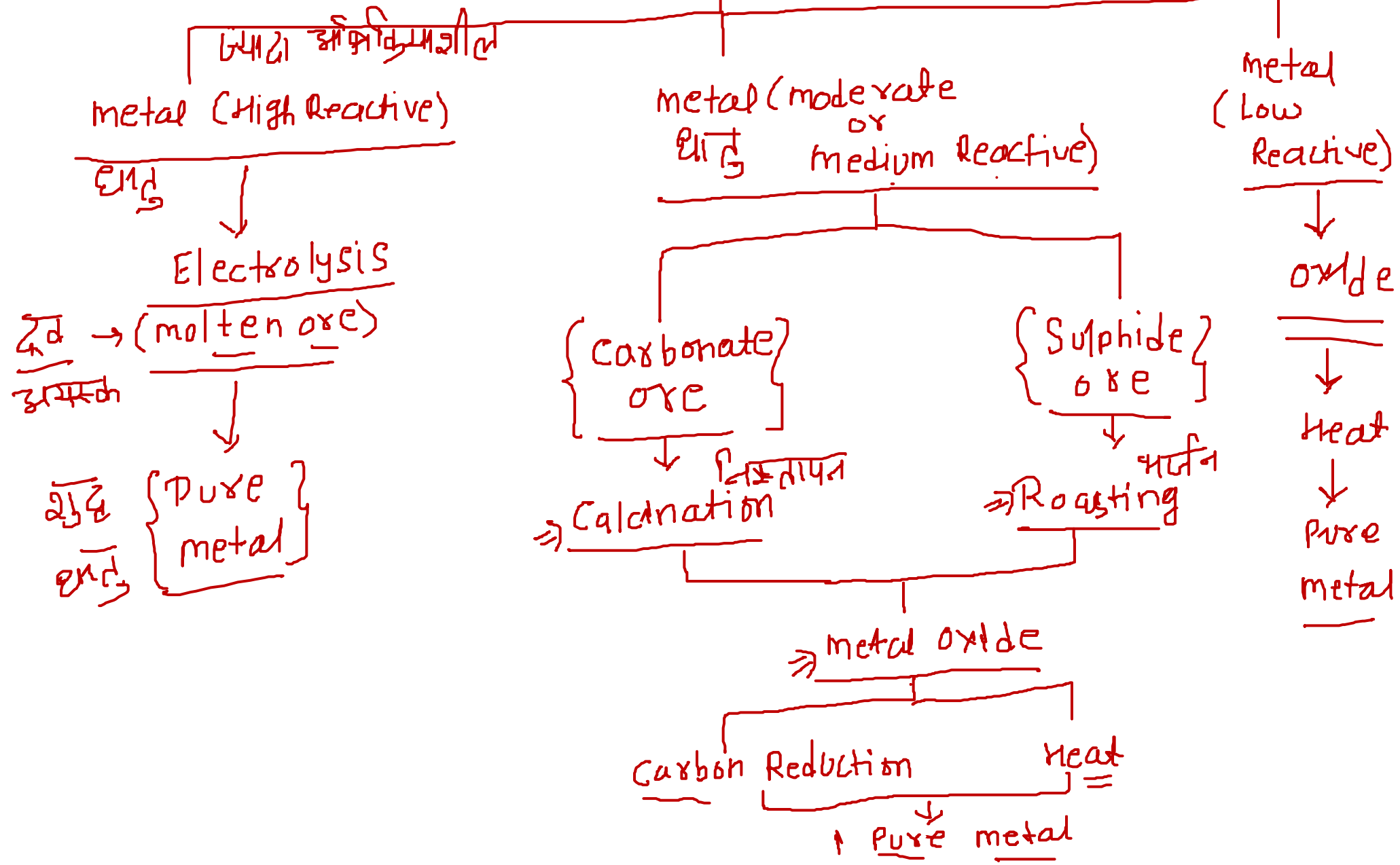
# \* Coke Reduction or Carbon Reduction

Na



metal  
(molten form)

# ORE (अम्ल)



Platinum → Pentlandite

↓  
Cu, & Ni

Byproduct

# IMP. IMPORTANT ORES (महत्वपूर्ण)

## → 1. IRON लोहा(Fe)

→ (i) Hematite ✓ (हेमेटाईट)	→ $\text{Fe}_2\text{O}_3$
→ (ii) Limonite ✓ (लिमोनाइट)	→ $\text{FeO}(\text{OH}) \cdot n\text{H}_2\text{O}$
→ (iii) Magnetite ✓ (मैग्नेटाइट)	$\text{Fe}_3\text{O}_4$ ✓ → <i>या कृत्रिम चुम्बक</i>
→ (iv) Iron Pyrite ✓ (आयरन पाईराइट)	$\text{FeS}_2$
→ (v) Copper Pyrites (कॉपर पाईराइट) ✓	$\text{CuFeS}_2$ → ✓✓
→ (vi) Siderite (सीडेराइट)	$\text{FeCO}_3$

## → 2. SODIUM सोडियम( $\text{Na}$ ) *→ Sodium Nitrate*

(i) Chile Salt Peter ✓ (चिली साल्ट पीटर)	$\text{NaNO}_3$
(ii) Borax ✓ (बोरेक्स / सुहागा)	$\text{Na}_2[\text{B}_4\text{O}_5(\text{OH})_4] \cdot 8\text{H}_2\text{O}$
(iii) Common Salt (साधारण नमक)	$\text{NaCl}$
(iv) Trona ✓ (ट्रोना)	$\text{Na}_2\text{CO}_3 \cdot \text{NaHCO}_3 \cdot 2\text{H}_2\text{O}$



### 3. ALUMINIUM एल्यूनियम (Al)

(i) Cryolite ✓	(क्रायोलाइट)	$\text{Na}_3\text{AlF}_6$
✓ (ii) Alunite ✓	(एल्युनाइट)	$\text{KAl}_3(\text{SO}_4)_2(\text{OH})_6$
✓ (iii) Corundum ✓	(कोरंडम)	$\text{Al}_2\text{O}_3$
(iv) Kaolinite/Kaoline ✓	(काओलीन)	$\text{Al}_2\text{Si}_2\text{O}_5(\text{OH})_4$

### → 4. POTASSIUM (K) ✓

(i) Carnalite ✓	(कारनेलाइट)	$\text{KCl} \cdot \text{MgCl}_2 \cdot 6\text{H}_2\text{O}$
✓ (ii) Salt Peter/Nitre ✓	(साल्ट पीटर)	$\text{KNO}_3$

## 5. MAGNESIUM (Mg) ✓

(i) Magnesite ✓	(मैगनेसाइट)	$\text{MgCO}_3$
(ii) Dolomite ✓	(डोलोमाइट)	$\text{MgCO}_3 \cdot \text{CaCO}_3$
(iii) Carnalite ✓	(कारनेलाइट)	$\text{KCl} \cdot \text{MgCl}_2 \cdot 6\text{H}_2\text{O}$
(iv) Kieserite ✓	(किसेराइट)	$\text{MgSO}_4 \cdot \text{H}_2\text{O}$

## 6. CALCIUM (Ca) ✓

✓ (i) Gypsum ✓	(जिप्सम)	$\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
✓ (ii) Calcite ✓	(कैलसाइट)	$\text{CaCO}_3$
✓ (iii) Asbestos ✓	(एस्बेस्टस)	$\text{CaSiO}_3 \cdot \text{MgSiO}_3$
✓ (iv) Dolomite ✓	(डोलोमाइट)	$\text{CaCO}_3 \cdot \text{MgCO}_3$
✓ (v) Fluorspar-Fluorite	(फ्लुरस्पर)	$\text{CaF}_2$

## 7. COPPER (Cu)

Copper Glance also called Redruthite, chalcocite and vitreous copper

(i) Cuprite ✓	(क्यूपराइट)	$\text{Cu}_2\text{O}$
(ii) Copper Pyrite ✓	(काँपर पायराइट)	$\text{CuFeS}_2$
(iii) Copper glance ✓	(काँपर ग्लान्स)	$\text{Cu}_2\text{S}$
<del>(i) Cuprite ✓</del>	<del>(क्यूपराइट)</del>	<del><math>\text{Cu}_2\text{O}</math></del>

## 8. SILVER (Ag) ✓

(i) Ruby Silver/Pyrargyrite (रूबी सिल्वर)	$\text{Ag}_3\text{SbS}_3$
(ii) Horn Silver/Cerargyrite/Chlorargyrite (हॉर्न सिल्वर)	$\text{AgCl}$

## 9. GOLD सोना (Au)

(i) Sylvanite or silver gold telluride (सिल्वानाइट)	$[(\text{Ag}, \text{Au}) \text{Te}_2]$
(ii) Calaverite (कैलावराइट)	$\text{AuTe}_2$

## 10. ZINC जिंक/जस्ता (Zn)

✓ (i) Zink blend (जिंक ब्लेंड)	ZnS
✓ (ii) Zincite (जिनसाइट)	ZnO
✓ (iii) Calamine (कैलामाइन)	ZnCO <sub>3</sub>

## 11. MANGANESE (Mn)

(i) Pyrolusite	(पाइरोल्युसाईट)	$\text{MnO}_2$
(ii) Magnite	(मैगनाईट)	$\text{Mn}_2\text{O}_3 \cdot 2\text{H}_2\text{O}$

## 12. URANIUM (U)

(i) Carnotite	(कार्नोट्टाईट)	$\text{K}_2 (\text{UO}_2)_2 (\text{VO}_4)_2 \cdot 3\text{H}_2\text{O}$
(ii) Pitch blende	(पिच ब्लैंड)	$\text{U}_3\text{O}_8$

## 13. MERCURY (Hg) $\rightarrow$ Imp.

(i) Cinnabar/Cinnabarite/Mercury Sulphide (सिनेबार)	$\text{HgS}$
--	--------------

## 14. TIN ( $\text{Sn}$ )

Reddish brownish or yellowish main ore of tin

(i) Cassiterite	(कैसिटराइट)	$\text{SnO}_2$
-----------------	-------------	----------------

## 15. LEAD (Pb)

(i) Galena also called [lean Glance]	(गैलेना)	$\text{PbS}$
---	----------	--------------



## 16. ANTIMONY (Sb)

(i) Stibnite (स्टिबनाइट)	$\text{Sb}_2\text{S}_3$
Soft grey also called antimonite	

## 17. CADMIUM (Cd) ✓✓

. CdS- Rare Greenockite Yellow Orangeto red brick

Greenockite is a rare cadmium bearing metal sulphide

--	--

## 18. COBALT (Co)

(i) Smelite (स्मैलाईट)	$\text{CoAsS}_2$
------------------------	------------------

## 19. NICKEL (Ni)

(i) Millerite – brassy in colour (मिलेराइट)	$\text{NiS}$
---	--------------

**Don't Forget to Like /  
Comment & Share this  
video**



[www.Youtube.com/safaltaclass](http://www.Youtube.com/safaltaclass)



[www.Facebook.com/safaltaclass](http://www.Facebook.com/safaltaclass)



[www.Instagram.com/safaltaclass](http://www.Instagram.com/safaltaclass)



Google Play  
Store



**SAFALTA**CLASS