

# Route Selection Depends On



Mineralogy



Copper Phase  
Distribution



Gangue



Liberation



Leach / Flotation  
Response

Sulfide Copper Ore



Grinding



Flotation



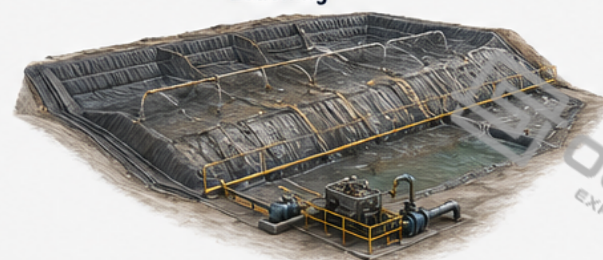
Oxide Copper Ore



Sizing / Agglomeration



Leaching



COMMON OUTPUT:  
CRUSHED COPPER ORE



Mixed Copper Ore



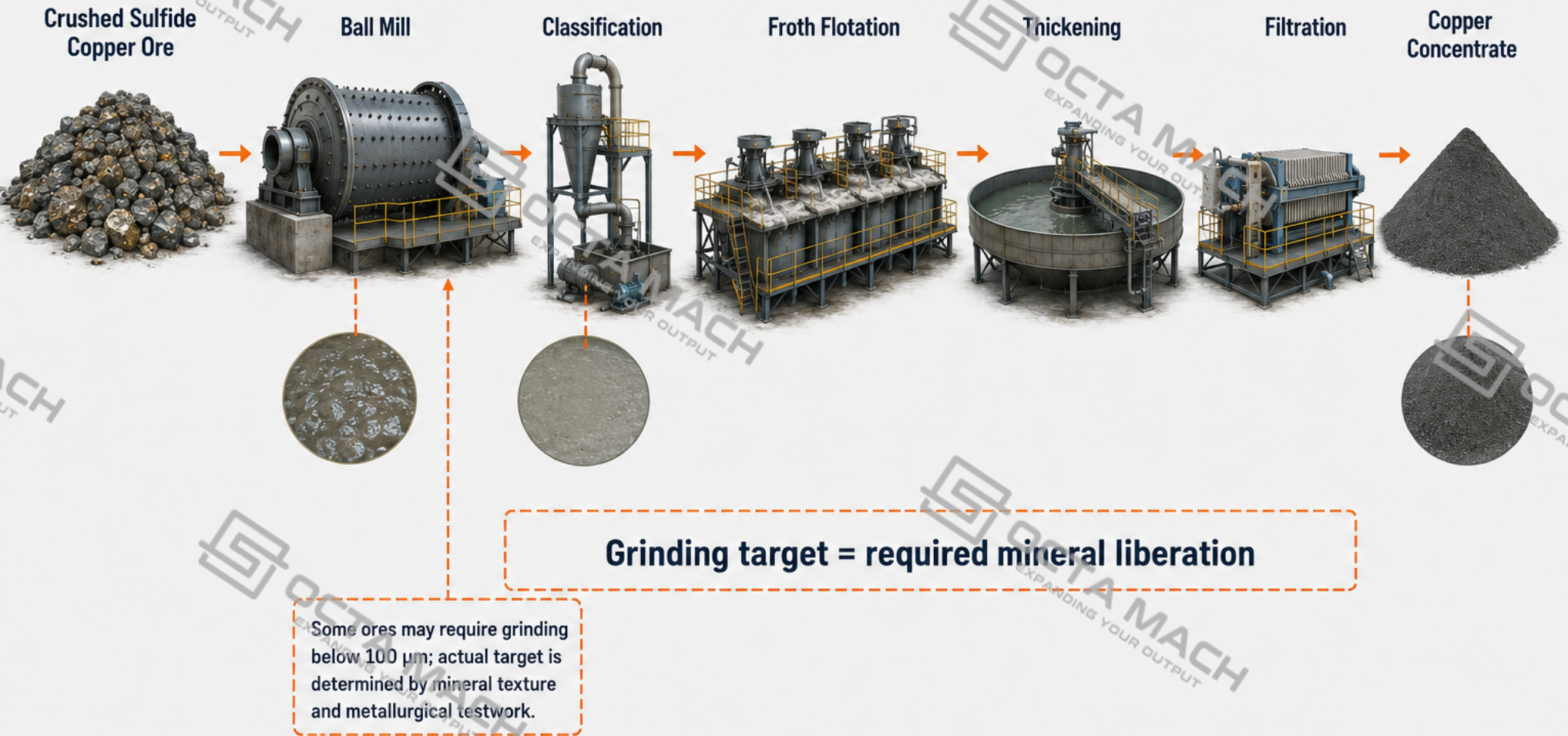
Metallurgical Testwork



Project-Specific Combined Route



# Sulfide Copper Ore Processing Route



# Oxide Copper Ore Leaching Route

## Typical Oxide Route Where Applicable

Crushing

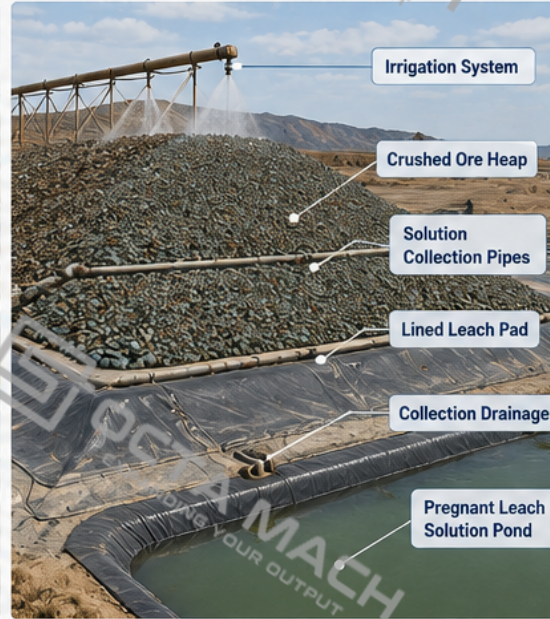
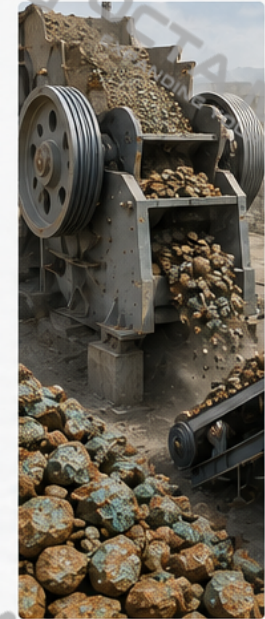
Sizing / Agglomeration  
Where Required

Heap Leaching

Pregnant Leach  
Solution

Solvent Extraction

Electrowinning



### Key Decision Controls



#### Copper Mineralogy

Type and distribution of oxide copper minerals drive leach response.



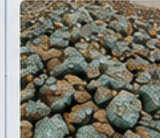
#### Acid Consumption

Gangue minerals and carbonates affect acid consumption.



#### Clay / Fines

Excess clay and fines can reduce heap permeability.



#### Heap Permeability

Adequate permeability is essential for solution flow and leach kinetics.



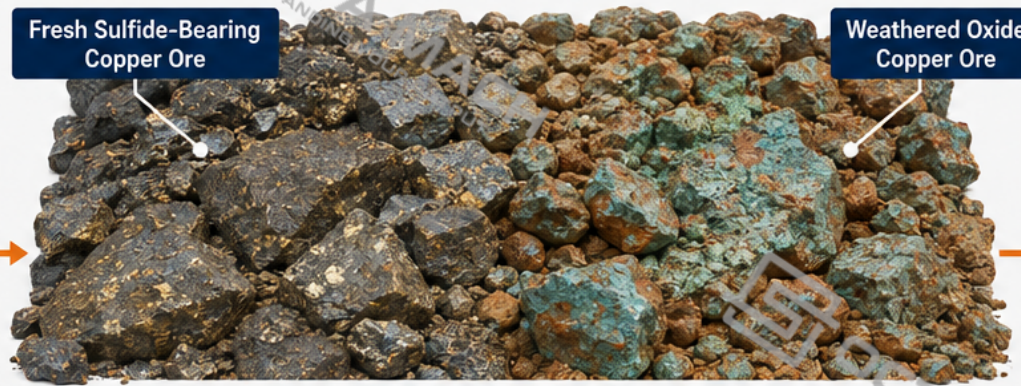
**Heap leaching is one option for suitable oxide copper ores.**

Route selection must be based on mineralogy, leach testing, ore characteristics and overall project objectives.

# Mixed Sulfide-Oxide Copper Ore Process Selection

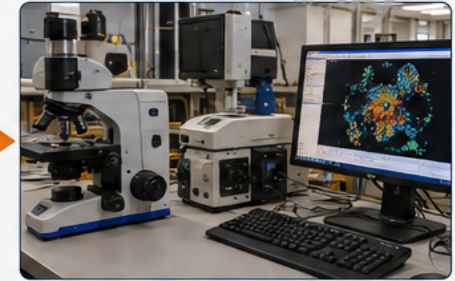


Representative Sampling  
Across Ore Types and Zones



Fresh Sulfide-Bearing  
Copper Ore

Weathered Oxide  
Copper Ore



Mineralogical Characterization  
and Analytical Testing



## Sampling and Mineralogical Testwork

Collect representative samples. Conduct mineralogy, chemical analysis and size characterization.



## Copper Phase Analysis

Determine distribution of copper in sulfide minerals, oxide minerals and gangue.



## Liberation / Flotation / Leach Response

Evaluate mineral liberation, flotation performance, leach extraction behavior and reagent response.

### Sulfide Flotation Route



Grinding

Flotation

Concentrate  
Thickening

Concentrate  
Filtration

### Oxide Flotation or Leaching Route



Grinding  
(As Applicable)

Flotation  
(If Suitable)

OR

Heap Leaching  
(If Suitable)

Pregnant Leach  
Solution

### Combined Project-Specific Route



Crushing  
and Screening

Blending /  
Ore Routing

Integrated Process  
Design

Downstream  
Processing



**No universal sulfide-to-oxide ratio defines the flowsheet.**

Flowsheet selection must be based on mineralogy, testwork results, economic factors and overall project objectives.