

Lithium Ore Crushing Circuit Engineering Guide

Process Design • Equipment Selection • Circuit Optimization



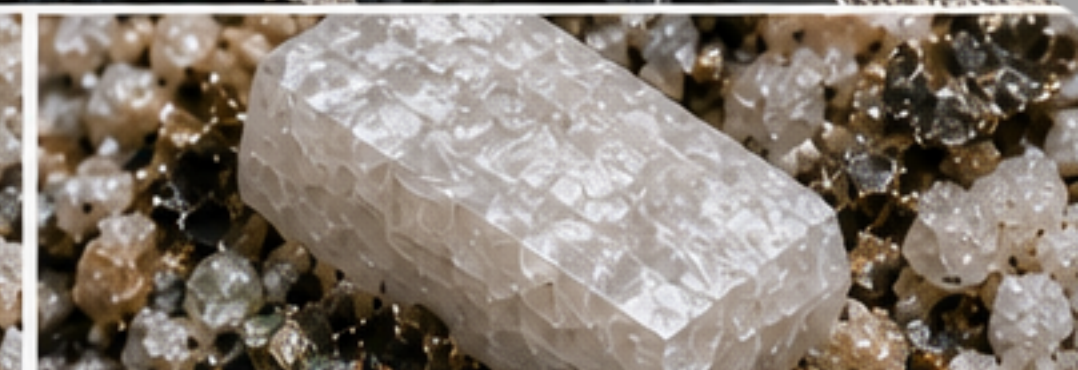
JAW CRUSHER



CONE CRUSHER



VIBRATING SCREEN





KEY FEED CHARACTERISTICS



Typical ROM Size
Up to 800–1200 mm
(32–48 in)



High Hardness
Abrasion and impact
resistant minerals



Pegmatite Composition
Quartz, feldspar, mica,
spodumene, and
accessory minerals

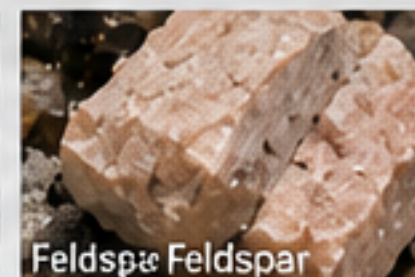


Variable Competency
Heterogeneous rock
strength within the blast

TYPICAL PEGMATITE MINERALS



Quartz Quartz



Feldspar Feldspar



Mica



Spodumene

LARGE FEED SIZE



ROM lithium pegmatite is typically delivered as large irregular rock fragments requiring primary size reduction.



HARD ROCK



Pegmatite ore commonly contains hard minerals such as quartz and feldspar that influence crusher duty.



MINERAL LIBERATION REQUIREMENT



Crushing must prepare the ore for downstream grinding and lithium mineral liberation.

Jaw Crusher

Jaw Crusher handles large hard-rock feed from mining operations and provides the first size reduction stage.



KEY FUNCTIONS



High Strength

Designed to crush hard, abrasive lithium-bearing pegmatite.



Reliable Performance

Robust design for continuous operation in demanding conditions.



Low Maintenance

Simple mechanical design for easy inspection and component access.

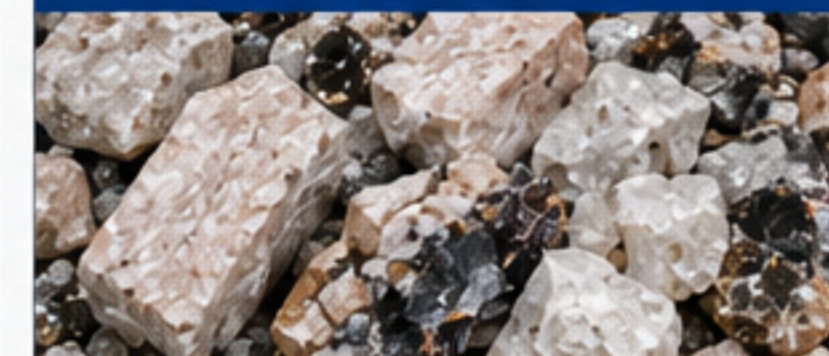


Consistent Reduction

Provides a uniform product size for efficient secondary crushing.

PROCESS SEQUENCE

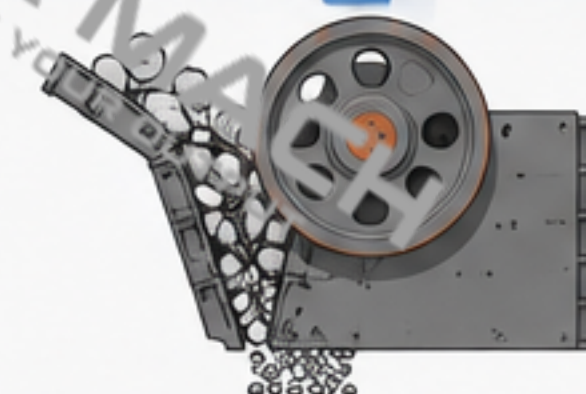
1. ROM ORE FEED



Run-of-mine lithium pegmatite from blasting operations.



2. JAW CRUSHER



Large rocks are compressed between the fixed and moving jaw plates.



3. REDUCED PARTICLE SIZE



First size reduction to prepare material for downstream secondary crushing.

Cone Crusher

Secondary crushing improves particle size control before screening and beneficiation.



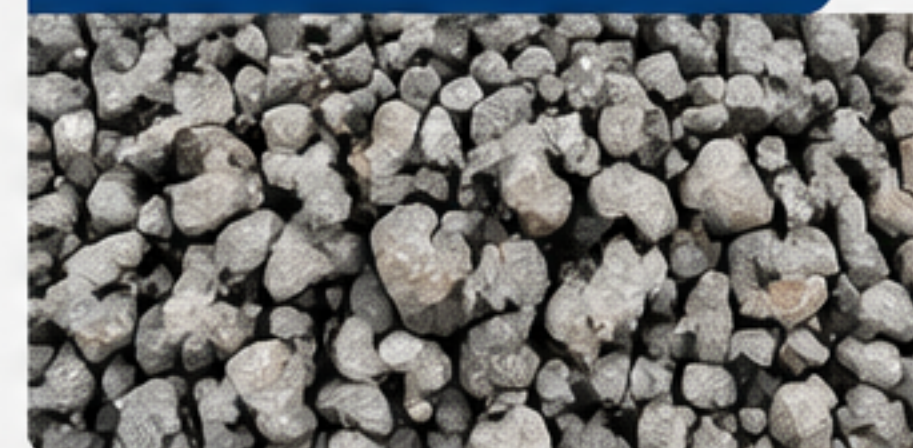
Primary Crushed Ore



Cone Crusher



Controlled Size





Screening separates qualified product from oversize material.

Oversize is returned to the cone crusher to maintain controlled product size before grinding and beneficiation.

**1. CONE CRUSHER****2. VIBRATING SCREEN****QUALIFIED MATERIAL**

Suitable size for downstream processing.

**GRINDING / BENEFICIATION****OVERSIZE RETURN**

Recirculated for further size reduction.



Lithium ore properties and processing objectives directly influence the configuration of the crushing circuit.

The following engineering factors must be evaluated during circuit design.

Ore Hardness



Wear Requirement



- Harder ore increases wear on crusher components.
- Wear-resistant materials and proper maintenance are essential.

Feed Size



Crusher Selection



- Larger feed size requires a primary crusher with sufficient feed opening.
- Proper crusher type ensures reliable operation and efficient size reduction.

Target Size



Screening Requirement



- Target product size defines the screening cut size.
- Proper screening ensures consistent product size and circuit efficiency.

Use the following checklist to evaluate key factors that influence lithium ore crushing circuit design and equipment selection.

Evaluation Factor		Engineering Influence
 Mineral type 	Processing route The lithium mineral type (spodumene, lepidolite, petalite, etc.) determines the suitable processing route and beneficiation method.	
 Hardness 	Crusher wear Higher hardness and abrasiveness increase wear on crushing components and affect liner and wear part selection.	
 Feed size 	Equipment configuration The maximum feed size affects crusher feed opening, circuit layout, and overall equipment configuration.	
 Product size 	Screening design The target product size determines screening layers, screen media, and closed circuit requirements.	