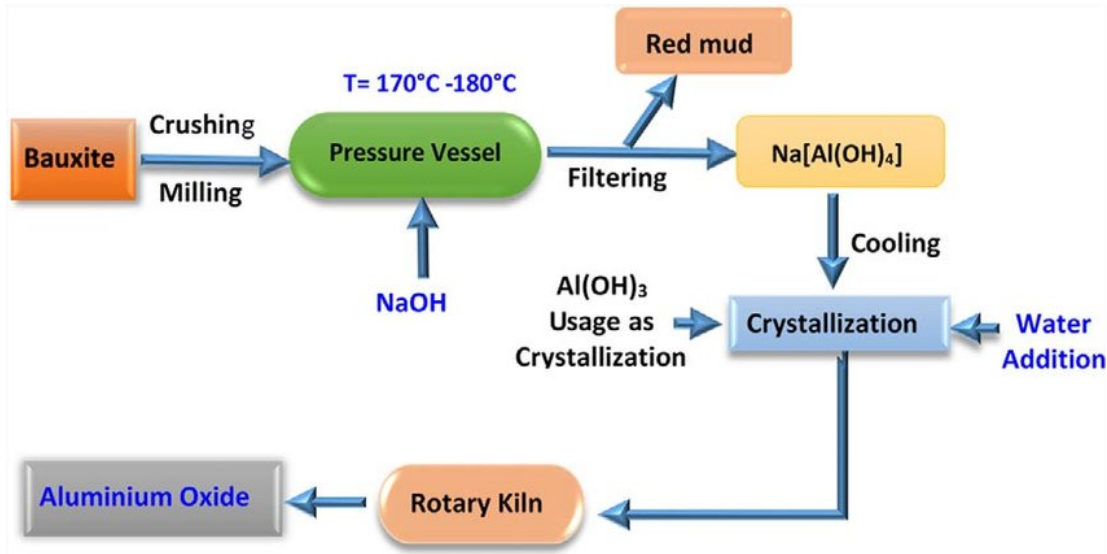


Aluminum Extraction:

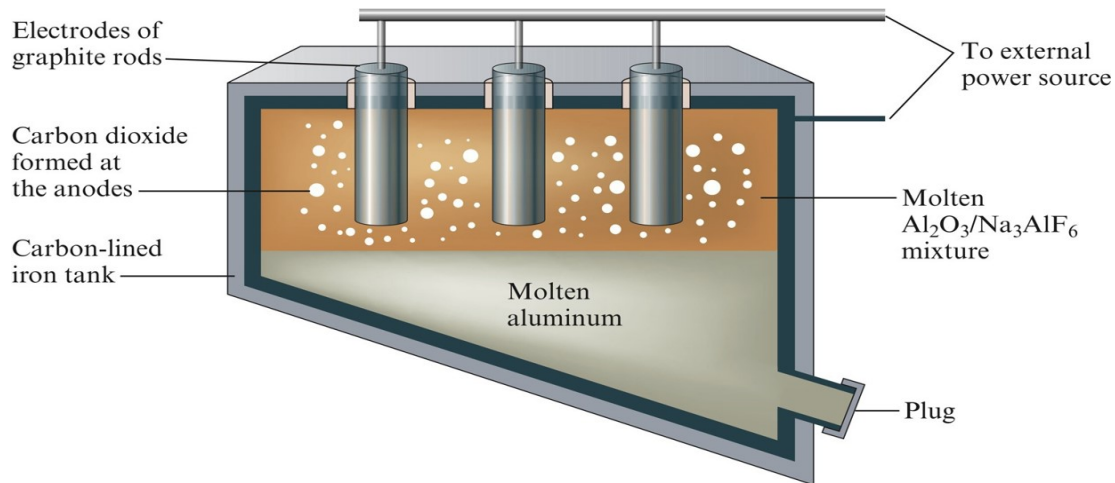
“Aluminium is also very reactive so is never found in isolation like gold and silver are, but rather as a compound in one of 270 different minerals.”

The most common mineral aluminum is found in is bauxite.

Bauxite into Aluminium Oxide:



Aluminum Oxide into Aluminum:



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On average it takes 58MJ to create 1kg of aluminum.

Why Aluminum?

- 100% recyclable and non-toxic
- Wide range of finishing options
- Resilient and highly reflective
- Resists corrosion
- High electrical and thermal conductivity
- Complex, intricate shapes are possible
- Increased strength in cold environments
- Uniform quality
- Comparatively low tooling costs
- Non-sparking, non-magnetic
- Non-combustible
- Good strength to weight ratio
- Attractive appearance
- Virtually seamless
- Easy to fabricate
- Can be joined in many ways
- Precise, close tolerances
- Near-net shape production
- Design freedom
- Cost-effective production

According to ALMAG Aluminum

How is aluminium is separated?

When a materials recovery facility separates products it uses their physical and chemical properties.

Properties of aluminum

- Light weight
- Corrosion Resistance
- **Electrical and Thermal Conductivity**
- Reflectivity
- Strength at Low Temperatures
- Impermeable and Odorless
- **Non-magnetic**

The highlighted properties is what an eddy current separator uses to separate it from other materials.

Chemical bond

- Metalloid
- It is lustrous, malleable and ductile, and has high electrical and thermal conductivity.
- crystalline structure
- Free flowing electrons

What is an eddy current separator?

An eddy current separator uses a powerful magnet that creates a magnetic field and this magnetic field reacts with non-ferrous metals(aluminium). Because aluminium has free flowing electrons it makes it electrically conductive. The magnetic field reacts with a nearby conductor then causing it to jump and fly away.

Aluminum Sorting:

Poster:

What we have to do:

1. What are the properties of aluminum
 - a. What makes it metallic?
 - i. It has the properties of a metallic bond and is a metallic bond
 - b. What makes it nonmagnetic?
 - i. Because of its crystalline structure
 - ii. Its magnetism is expressed in its generations and interaction of eddy currents.
 - c. What other things does it have?
2. What is an eddy current?
 - a. How is it created?
 - b. What does it do?
 - c. Why does it move aluminum
3. How easy is it to sort aluminum
 - a. How much energy?
 - b. Does it waste to throw away?

Product:

1. Small scale eddy current separator
 - a. "Just move the can first"

Aluminum Recycling

Separating
Why?

Example:

Copper tube

