



## Synthesis of Boron Using Molten Salt Electrolysis

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**Summary:** A method to produce elemental boron

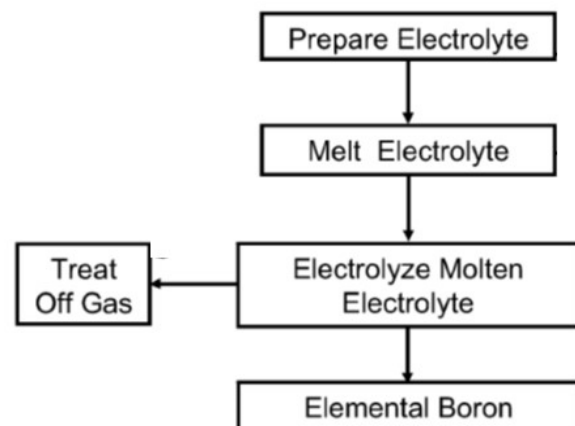
**Description:** Boron is an element that is difficult to produce and requires substantial amount of energy to isolate in its pure form. Typically, boron is synthesized by metallothermic reduction of its oxide with magnesium or sodium, reaction of boron halogenides with hydrogen, or thermal decomposition of diborane. This work presents a new method to produce elemental boron using molten salt electrolysis. The molten electrolyte has a boron-containing compound, at least one alkaline earth fluoride salt, and at least two alkali earth fluoride salts. Elemental boron is recovered by electrolyzing the molten electrolyte in the temperature range of 700 to 775°C. The recovered elemental boron has a purity of at least 50%.

### Main Advantages of this Invention:

- Uses no metallic magnesium
- Boron recovered is at least as pure (in most cases purer) than current methods
- The process can be reinforced by the boronization of the steel cathodes

### Potential Areas of Application:

- Aerospace applications
- Solid-fuel propulsion
- Shielding for nuclear radiation
- Neutron sensors
- Cancer treatment
- Ceramics



**ID Number:** 9006

**Intellectual Property Status:** US 8,287,715

**Opportunity:** We are seeking an exclusive or non-exclusive licensee for implementation this technology.

### For more information contact:

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