

# Towards the Circular Economy

The Bauxal II project's main objective is to transform a product of recycled origin, secondary aluminum oxide, into an alternative raw material to bauxites in its use as a refractory.



El proyecto BAUXAL-II (LIFE17ENV/ES/00160) es cofinanciado por el programa EU LIFE

## BAUXAL II

# Melt becomes refractory

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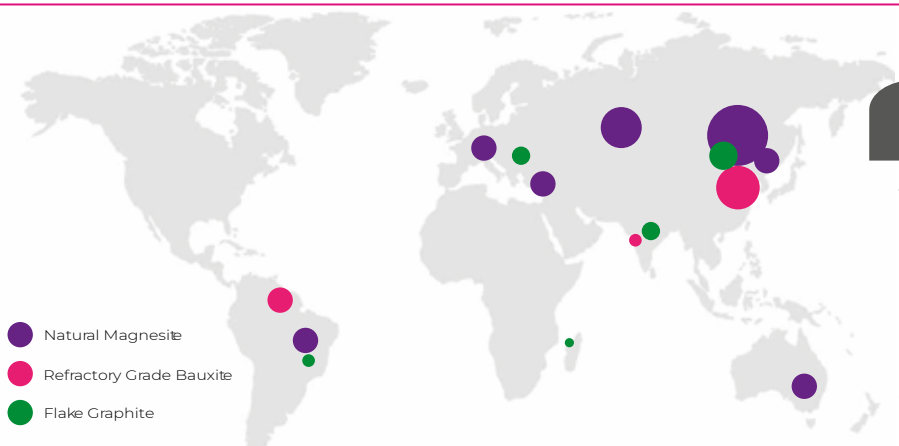
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### Project description

The aluminium recycling process to produce secondary aluminium alloys generates a hazardous waste called salt slag (EWR 100308). This waste can be recovered through a complex 5-stage process, from which three by-products are recovered: **aluminium concentrates, fluxing salts and secondary aluminium oxide, commercially known as Paval.**

### Project focus

The aluminium and refractory industries are major consumers of bauxite in its different grades.

Annually, some 250 Mt are mined worldwide, of which approximately

10 Mt correspond to the non-metallurgical grade and are converted into 4 Mt of calcined bauxite, an essential raw material in the manufacture of bricks and refractory concretes with high requirements.

The mines supplying the world's refractory grade bauxite production are located in China (95%).

In recent times, restrictive Asian environmental policies, economic clashes between major powers and the current global pandemic have led to volatility in the world's production of refractory grade bauxite.

have led to price volatility, instability and even lack of supply, placing the European Union in a very vulnerable position with respect to this raw material.

This problem means a significant loss of competitiveness for European refractory companies.

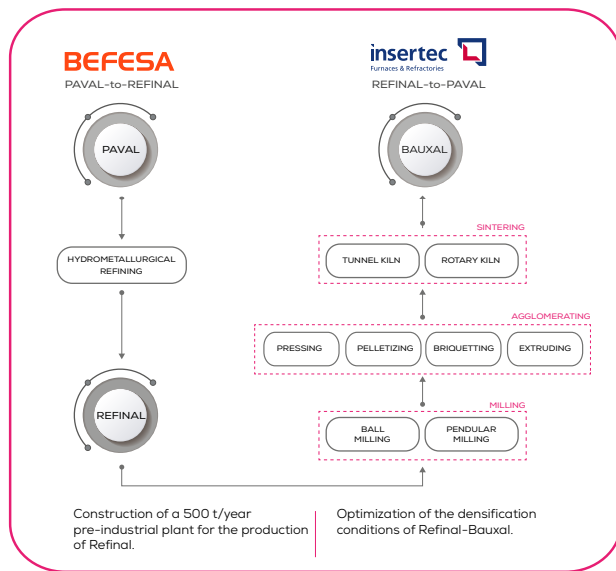
Bauxite as a mineral resource is therefore close to being considered a critical raw material (CRM) for Europe.



The secondary aluminium oxide, **Paval**, according to its physical and chemical characteristics can be considered a secondary bauxite, with 10% MgO in the form of spinel.

The Bauxal II project is focused on refining PAVAL by eliminating the impurities that allow it to be transformed into an alternative raw material to calcined bauxite in the manufacture of refractory materials: BAUXAL. Proceeding with the following roadmap:

PAVAL → REFINAL → BAUXAL



### Expected impact (2022)

- 1 Demonstration at pre-industrial scale of Paval-Refinal-Bauxal.
- 2 A reduction of 1000t/year of hazardous waste (salt slag).
- 3 Guaranteeing the best use of natural resources, avoiding the extraction of 250t of Bauxite (CRM), which leads to a reduction of:
  - Greenhouse effect gases of 1,225t of CO<sub>2</sub> eq.
  - Water consumption of 75 m<sup>3</sup>
  - Energy consumption of 3,820 KWh
  - Fossil fuel consumption 235.5 kg
  - Improved air quality, reducing dust emissions
- 4 Ensure replicability in the EU.

