

# ACTIVATED BAUXITE

SPECIAL GRADE



**EFFICIENCY THAT REGENERATES:  
SUSTAINABLE TREATMENT  
FOR YOUR OIL!**



**GRUPO CURIMBABA**



MINERAÇÃO  
CURIMBABA



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Activated bauxite is a high-performance, regenerable adsorbent granulate produced by thermal activation of carefully selected bauxite ores, extensively applied in used-oil re-refining processes and in the treatment of a wide range of oils.

Its porous structure and chemical properties allow the removal of contaminants such as sulfur, chlorine, phosphorus, silicon, oxidized compounds, acids, water, and metals (calcium, zinc, magnesium, sodium, iron, among others).

- Highly effective bleaching agent for reducing color, oxidation products, and soot.
- Sulfur reduction due to its high porosity and surface area, capturing polar and high-molecular-weight sulfur compounds (e.g., thiophenes and sulfoxides).
- High-performance material for reducing acidity (TAN) through selective adsorption of acidic species.
- Material with chemical and physical adsorption properties, acting directly in the removal of contaminants that negatively impact oil performance, such as S, Cl, P, Si, Ca, Zn, Na, Fe, Mg.
- Its high thermal stability allows activated bauxite to be regenerated and reused across multiple oil-treatment cycles while maintaining its efficiency. This provides a solution that reduces operating costs and significantly minimizes environmental impacts associated with the process.

Activated bauxite can also be used in combination with other used-oil re-refining systems, functioning as a complementary step or as a pre-treatment stage in processes such as:

**Acid-clay process (conventional):** bauxite acts in the removal of metals, bleaching, and elimination of compounds that give color and smell to the oil.

**Advantages:** reduced operating costs and improved process efficiency, lower reagent consumption during the sulfonation, bleaching, neutralization, and filtration stages (sulfuric acid, adsorptive clay, and lime), and reduced waste generation from these stages, particularly contaminated clay and acid sludge. Furthermore, the use of activated bauxite enables the complete elimination of these stages through a single percolation process.

**Solvent extraction:** pretreatment reduces the contaminant load, while post-treatment (polishing) improves oil quality. Both approaches are feasible.

**Advantages:** It improves the purity of the re-refined oil and the efficiency of the solvent.

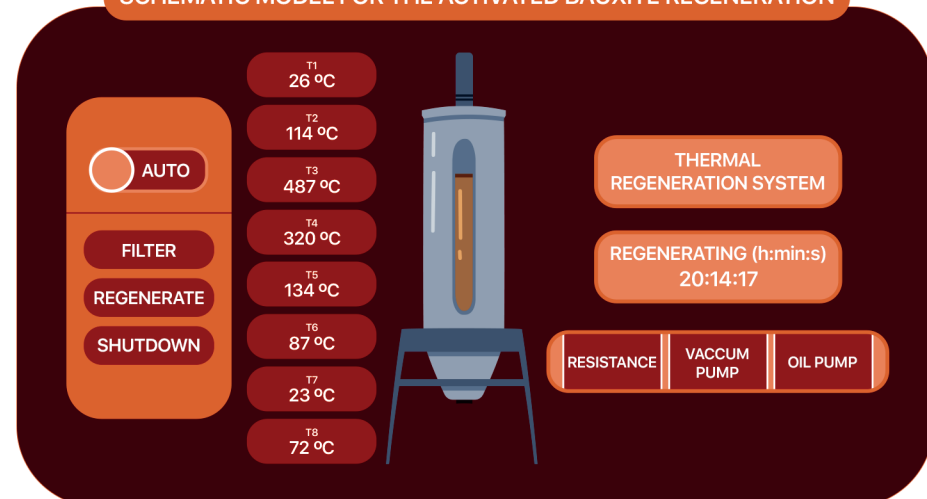
**Hydrogenation:** removal of refractory organosulfur and nitrogen-containing compounds, as well as silicon species that can poison hydrotreating catalysts.

**Advantages:** extended catalyst lifetime and reduced operating severity (lower temperature, pressure, and hydrogen consumption).

#### BENEFITS OF COMBINATION

- ✔ **Process synergy:** Bauxite removes contaminants that other methods do not efficiently eliminate.
- ✔ **Cost reduction:** Decreased consumption of costly inputs, reduced oil losses, and lower waste disposal expenditures.
- ✔ **Flexibility:** Can be integrated as pre- or post-treatment depending on the process.

#### SCHEMATIC MODEL FOR THE ACTIVATED BAUXITE REGENERATION

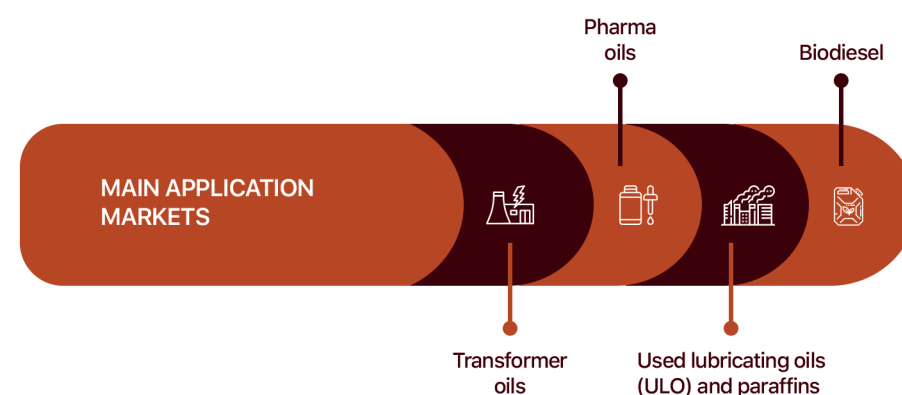


CHEMICAL COMPOSITION (%)	Al <sub>2</sub> O <sub>3</sub>	93.30
	Fe <sub>2</sub> O <sub>3</sub>	3.42
	SiO <sub>2</sub>	2.47
	Other	0.51
MAIN MINERALOGICAL ASSEMBLAGE	Alumina - δ Al <sub>2</sub> O <sub>3</sub>	
	Boehmite - AlO(OH)	

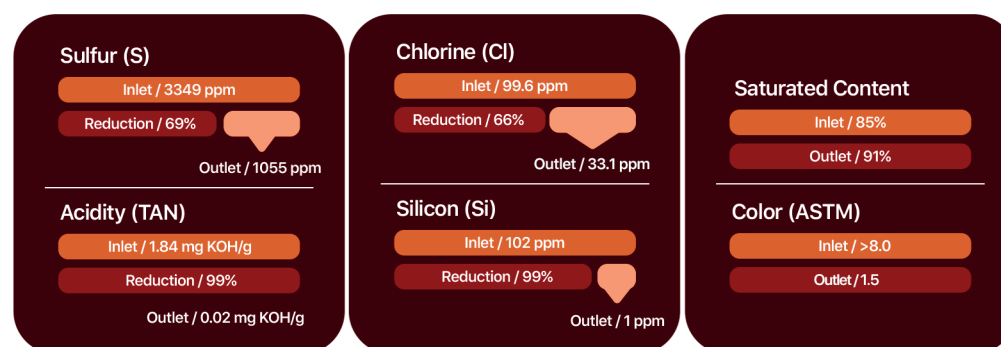
Property/Size	Unit	10/30	20/50	30/70
Mean diameter	mm	1.65	0.90	0.40
Specific surface area	m <sup>2</sup> /g	185	251	272
Permeability	cm <sup>4</sup> /g.min	860	700	397
Bulk Density	g/cm <sup>3</sup>	0.90	0.87	0.89
Abrasion loss	%	16.50	18.19	24.50
Moisture	%	≤3.00	≤3.00	≤3.00
Loss on ignition	%	≤15.00	≤15.00	≤15.00

#### Typical values

**Note:** Compliant with occupational health regulations, as it does not contain free crystalline silica.



#### USED LUBRICATING OIL - CASE STUDIES Reduction of Contaminants (Average Values) CASE STUDY 1



#### CASE STUDY 2

