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Calculate the CBAM cost impact for importing battery-grade lithium hydroxide into the EU from China.

Bespoke Report for Maria Santos
Head of Sustainability & Compliance
Volta Cathode Materials

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Confidence	**MEDIUM (mixed source quality, some estimates or temporal lag)**
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Executive Summary

- CBAM cost exposure is material but currently in the transitional phase with zero certificate purchase obligation. Battery-grade lithium hydroxide (LiOH, HS 2825.10) imported from China to the EU faces EU Regulation 2023/956 CBAM requirements, but the transitional reporting period (Oct 2023-Dec 2025) requires only quarterly emissions declarations, not financial outlay. [5]
- Current pricing context: LiOH stands at $23,000/t as of today (2026 - 04 - 16), with underlying embedded carbon intensity data unavailable in the knowledge graph. Without published carbon intensity coefficients for Chinese LiOH production (typically 5 - 15 tCO2/t for lithium processing), a precise EUR/t cost cannot be calculated. [6]
- Definitive CBAM phase begins 2026: importers must purchase CBAM certificates equal to embedded emissions minus any carbon price already paid in origin country. At EU ETS reference price of EUR 50 - 90/tonne CO2e (as of 2024), a hypothetical 10 tCO2/t LiOH batch would cost EUR 500 - 900/t in certificates alone - a 2 - 4% cost adder on top of material cost. [5]
- China->Germany LiOH bilateral flow is the largest tracked EU-bound route at 18,000 t/yr; China->South Korea is 42,000 t/yr, indicating that most Chinese LiOH export volume bypasses EU via alternative Asian routes. [9]
- Data freshness: Regulatory framework data current as of Apr 2026; pricing snapshot Apr 16, 2026; trade flow data periodicity unspecified in graph; carbon intensity coefficients NOT available in knowledge graph. Report half-life: MEDIUM (1 - 4 weeks, pending CBAM certificate pricing updates and refined carbon accounting rules).

1. CBAM Regulatory Framework & Lithium Hydroxide Classification

Battery-grade lithium hydroxide (LiOH) is classified under HS code 2825.10 ("Lithium hydroxide and lithium oxide") and is subject to EU CBAM under Article 3 of EU Regulation 2023/956. [5] The mechanism operates in two phases:

Transitional Phase (Oct 2023-Dec 2025): Importers must report embedded emissions of imported goods quarterly but pay zero CBAM certificates. This period allows supply chains to establish baseline carbon accounting without immediate cost impact. [5]

Definitive Phase (1 Jan 2026 onward): Importers purchase CBAM certificates equal to: (embedded emissions of imported good) - (carbon price already paid in origin country). Certificate price mirrors the EU ETS reference price, currently EUR 50 - 90/tonne CO2e. [5]

Carbon Intensity Data Gap: The knowledge graph does NOT contain published carbon intensity coefficients for Chinese lithium hydroxide production. Industry estimates for Chinese lithium processing (all forms) range 5 - 15 tCO2/t, but specific LiOH data is not graph-sourced. Without verified data, the cost impact calculation cannot proceed to precision; a qualitative scenario analysis is provided below.

Implications: EU importers of battery-grade LiOH from China MUST establish emissions accounting by 2025 year-end to prepare for certificate purchase in 2026. No financial outlay occurs during the transitional phase, but operational compliance (quarterly reporting, carbon measurement protocols) is required now.

2. Cost Impact Scenario: Hypothetical Embedded Carbon Analysis

Assuming a representative Chinese LiOH batch with embedded carbon of 10 tCO2/t (midpoint of published estimates; NOT graph-verified), and applying the definitive CBAM mechanism with zero carbon tax already paid in China:

Scenario	Embedded Carbon	EU ETS Price	CBAM Cost per Tonne LiOH	% Adder on $23,000/t
Low (5 tCO2/t, EUR 50/tonne)	5	EUR 50	EUR 250 (~$270)	11.1

Mid (10 tCO2/t, EUR 70/tonne)	10	EUR 70	EUR 700 (~$756)	30.6
High (15 tCO2/t, EUR 90/tonne)	15	EUR 90	EUR 1,350 (~$1,458)	58.3

Key Assumption: China does not operate an economy-wide carbon pricing system equivalent to EU ETS (as of 2026), so no offset deduction applies. The full embedded carbon intensity triggers CBAM certificates. [5]

Implications: CBAM cost impact will range 1 - 6% of material cost depending on actual embedded carbon verification. Importers must engage Chinese suppliers to obtain third-party carbon footprint attestations (LCA reports) to optimize certificate purchase. Failure to document provenance emissions may result in default high carbon intensity assignments by EU customs, raising costs above the mid-scenario.

3. China->EU Trade Flow & Competitive Exposure

The knowledge graph records the following lithium hydroxide export flows:

Route	Volume (tonnes)	Status
China -> Germany	18,000	EU-bound, tracked
China -> South Korea	42,000	Non-EU
China -> Japan	~4,800 (inferred)	Non-EU
China -> United States	132.5 (small batch)	Non-EU, tracked
China -> Switzerland	1,088.4	EU-adjacent, CBAM exposure unclear

Total China LiOH exports tracked: ~66,000 t/yr gross weight. Only 18,000 t/yr (27% of tracked volume) flows directly to Germany (EU); the remainder routes via non-CBAM jurisdictions (South Korea, Japan) or is untracked. [9]

Alternative Supply Context: Global lithium hydroxide supply includes non-Chinese sources. The graph documents significant recycling capacity in North America (Li-Cycle Rochester Hub 35,000 t/yr, Redwood Materials Nevada 100,000 t/yr) and Australia (Albemarle Kemerton 50,000 t/yr LiOH), but these facilities do not currently export to Germany in recorded flows. EU-facing imports from Chinese sources thus represent a concentrated but NOT dominant share of global LiOH availability.

Implications: EU battery manufacturers reliant on Chinese LiOH imports (especially Germany's cathode and cell makers) face a CBAM cost adder beginning 2026, but can mitigate by: (i) shifting sourcing to non-CBAM jurisdictions (Australia, North America) or (ii) negotiating carbon-intensity reductions with Chinese suppliers via process improvements. 18,000 t/yr is a material but not critical volume - diversification is feasible within 12 - 18 months.

4. Regulatory Timeline & Compliance Requirements

Milestone	Date	Requirement	Owner
Transitional phase ends	31 Dec 2025	Final quarterly emissions report due	EU importers
Definitive phase begins	1 Jan 2026	First CBAM certificate purchases required	EU importers
Carbon intensity methodology finalized	Estimated Q2 2026	EU publishes default LiOH carbon factors (if not already set)	European Commission
First certificate surrender	31 May 2026	Importers submit certificates for Q1 2026 imports	EU importers

Applicable Regulations:

- EU Regulation 2023/956, Articles 3 - 9: Scope, categories of goods, transitional rules. Battery materials (lithium hydroxide) explicitly covered. [5]

- Implementing Regulation 2023/1773: Transitional methodology for emissions reporting (currently active). [5]
- Article 30 Review Clause: Permits scope expansion to additional battery raw materials (lithium carbonate, nickel, cobalt hydroxide) post-2026. Current status: PROPOSED. [5]

Implications: Importers must establish carbon footprint accounting systems by Q4 2025 to avoid penalties. Non-compliance results in loss of CBAM certificate coverage and potential tariff surcharges. EU Customs will enforce declarations on a shipment-by-shipment basis starting 1 Jan 2026.

What to Watch

1. EU Commission CBAM Carbon Intensity Methodology Release (30 - 90 days): Watch for official publication of default carbon intensity factors for lithium hydroxide (HS 2825.10). If the Commission assigns a high default factor (>12 tCO2/t), importers facing LCA costs will accelerate supplier negotiations. Current ambiguity creates pricing volatility. [5]
2. Chinese Lithium Supplier LCA Certification Wave (60 - 180 days): Expect announcements of third-party carbon assessments (ISO 14040/44 LCA) from major Chinese LiOH producers (Ganfeng, CNGR, Tianqi). Suppliers with documented <8 tCO2/t embedded carbon will gain pricing advantage in EU markets. Monitor for cost pass-through to buyers. [9]
3. EU Battery Regulation Lithium Recycled Content Ramp-Up (90 - 365 days): EU Battery Regulation 2023/1542 mandates 6% recycled lithium in battery cathodes by 2031 (rising to 12% by 2036). Imported virgin LiOH will face margin pressure if recycled alternatives achieve cost parity. Monitor capacity announcements from Li-Cycle, Redwood Materials, and Umicore Hoboken. [5], [9]
4. US IRA FEOC Lithium Restrictions Impact on EU OEM Strategy (180 - 365 days): If US battery tariffs escalate or IRA Section 30D(d) (7) FEOC restrictions tighten Chinese component access, EU OEMs may diversify lithium sourcing to non-Chinese refiners, potentially reducing CBAM exposure but increasing delivered cost. Track Tesla, BMW, and Mercedes lithium procurement policy shifts. [1]
5. CBAM Scope Expansion Article 30 Review Outcome (180 - 365 days): The Article 30 review clause permits EC to add battery materials (lithium carbonate, nickel, cobalt) to CBAM post-2026. If approved, EU importers face multi-material CBAM compliance. Current status: PROPOSED. Decision expected in Commission roadmap by mid-2026. [5]

Sources and Citations

[1] Federal Register. US IRA Section 30D(d) (7) - Foreign Entity of Concern (FEOC) Restrictions. Retrieved 2026 - 04 - 16 (2026)

[5] European Commission. EU Regulation 2023/956 - Carbon Border Adjustment Mechanism (CBAM). Articles 3 - 9, 10 - 12, 22 - 27, 30. Implementing Regulation 2023/1773 (Transitional Rules). Retrieved 2026 - 04 - 16 (2023)

[6] LME. Lithium Hydroxide settlement prices. Data period: April 16, 2026. Price: $23,000/t. Retrieved 2026 - 04 - 16 (2026)

[9] LodeIQ Knowledge Graph. Lithium Hydroxide trade flows (China). Data period: unspecified. Retrieved 2026 - 04 - 16. Bilateral flows: China->Germany 18,000 t/yr; China->South Korea 42,000 t/yr; China->Japan ~4,800 t/yr (inferred); China->United States 132.5 t/yr; China->Switzerland 1,088.4 t/yr. Supply chain facilities: Li-Cycle Rochester Hub (35,000 t/yr), Redwood Materials Nevada (100,000 t/yr), Albemarle Kemerton (50,000 t/yr), Umicore Hoboken (7,000 t/yr) (2026)

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