carboncalcpcf.com

Product Carbon Footprint Dashboard: iwyoqlihfn

Total PCF: 16.802 kg CO2e

16.802

Total Footprint (kg CO2e)

24.003

Carbon Intensity (kg CO2e / kg product)

Lithium-ion Battery Cell

Top Material Hotspot

Scope 3 (Use Phase)

Primary Emission Scope

Lifecycle Stage Breakdown

Use Phase	8.100 kg CO2e (46.36%)
Materials	6.515 kg CO2e (37.28%)
Production (Scope 2)	2.482 kg CO2e (14.20%)
Transport	0.377 kg CO2e (2.16%)
End-of-Life (Credit)	-0.672 kg CO2e

Material Carbon Impact Breakdown

Lithium-ion Battery Cell	3.500 kg CO2e (53.72%)
Aluminum Alloy Frame	1.200 kg CO2e (18.42%)
Printed Circuit Board (PCB)	0.800 kg CO2e (12.28%)
ABS Plastic Housing	0.625 kg CO2e (9.59%)

Highlights & Key Findings

- The **Use Phase** is the primary emission hotspot, contributing approximately 46.4% of the product's positive carbon footprint, largely due to energy consumption during operation.
- **Material Acquisition** is the second most significant contributor, accounting for about 37.3% of positive emissions, with the Lithium-ion battery cell and aluminum frame being key impact areas.
- The **Production Phase** (Scope 2) contributes around 14.2%, indicating that increasing renewable energy usage at the China factory beyond the current illustrative 20% can yield substantial reductions.
- The product benefits from a significant **End-of-Life carbon credit** due to an assumed high recyclability rate and circular economy programs, reducing overall impact.

Recommended Action Plan

- **Enhance Product Energy Efficiency:** Redesign 'iwyoqlihfn' for reduced energy consumption during its operational lifespan and explore strategies to promote renewable energy use by end-users.
- **Prioritize Sustainable Material Sourcing:** Investigate and switch to alternative, lower-carbon materials for high-impact components, particularly batteries and structural elements. Engage with suppliers for primary emission data.
- **Boost Renewable Energy Integration in Production:** Significantly increase the proportion of renewable energy utilized in the China production facility through direct generation, Power Purchase Agreements (PPAs), or verified renewable energy certificates.
- **Optimize Logistics & Supply Chain:** Refine transport routes, explore lower-emission freight modes, and consolidate shipments for both inbound raw materials and outbound finished products.
- **Strengthen Circularity Initiatives:** Continue to develop and expand take-back programs and ensure the high theoretical recyclability is effectively realized in practice, maximizing end-of-life benefits.