

carboncalpcf.com

# Product Carbon Footprint Dashboard

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Total PCF: **20.39 kg CO2e**

TOTAL PRODUCT FOOTPRINT

**20.39**

kg CO2e / unit

TOP MATERIAL HOTSPOT

**Li-Ion Battery**

2.25 kg CO2e (43.5%)

PRIMARY EMISSION SCOPE

**Scope 3: Use Phase**

12.50 kg CO2e (61.3%)

## Lifecycle Stage Breakdown

Materials

Production

Logistics

Use Phase

End-of-Life

## Material Carbon Impact (Top 4)

Li-Ion Battery

2.25 kg CO<sub>2</sub>e (43.5%)

Steel Casing

1.25 kg CO<sub>2</sub>e (24.2%)

PCB

0.80 kg CO<sub>2</sub>e (15.5%)

ABS Plastic

0.60 kg CO<sub>2</sub>e (11.6%)

## Key Insights

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- **Use Phase Dominance:** The product's energy consumption during its 5-year lifespan is the largest contributor to its carbon footprint, accounting for 12.50 kg CO<sub>2</sub>e/unit (61.3%). This highlights the critical need for energy efficiency during product usage.
- **Material Impact:** Raw materials, particularly the Lithium-Ion Battery (2.25 kg CO<sub>2</sub>e) and Steel Casing (1.25 kg CO<sub>2</sub>e), are significant emission hotspots within the supply chain, totaling 5.17 kg CO<sub>2</sub>e/unit (25.35%).
- **Manufacturing Opportunities:** While 30% renewable energy is assumed for manufacturing in China, the production phase still contributes 2.02 kg CO<sub>2</sub>e/unit (9.91%), indicating room for further decarbonization through increased renewable energy adoption and efficiency improvements.

## Action Plan for Reduction

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- **Enhance Use Phase Efficiency:** Focus on designing more energy-efficient products and educating users on sustainable usage practices to drastically reduce the 61.3% emissions from this stage.
- **Sustainable Sourcing & Design:** Explore lower-carbon alternatives for high-impact materials like Lithium-Ion batteries and steel. Implement circular design principles to extend product life and improve recyclability.
- **Renewable Energy Transition:** Accelerate the transition to 100% renewable energy for manufacturing operations. Engage with suppliers to encourage their adoption of clean energy.
- **Primary Data Collection:** Implement robust systems for collecting specific primary data on BOM, energy usage, and transport, rather than relying on industry averages, to ensure higher precision in future PCF analyses.
- **LSR Standard Implementation:** Prepare for the full implementation of the GHG Protocol's Land Sector and Removals (LSR) Standard, especially if any raw materials have land-use implications, to account for and mitigate associated impacts.