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Product Carbon Footprint for Ihhwdsxepv

Total PCF: 37.252 kg CO2e / unit

Product: **Ihhwdsxepv**

Quantity: **1.0
unit**

Boundary: **Cradle-to-
Grave**

Country: **China**

Standard: **GHG
Protocol**

Generated: **June 1,
2026**

Total Footprint

37.252 kg CO₂e

per unit of lhhwdsxepv

Carbon Intensity

34.49 kg CO₂e / kg

based on 1.08 kg material weight

Top Material Hotspot

Lithium-ion Battery

5.000 kg CO₂e (48.7% of BOM)

Primary Emission Scope

Use Phase

25.000 kg CO₂e (65.0% of gross PCF)

Lifecycle Stage Breakdown

Use Phase (Scope 3, Cat 11)	25.000 kg CO2e (65.0%)
Raw Materials (Scope 3, Cat 1)	10.275 kg CO2e (26.7%)
Manufacturing (Scope 2)	2.160 kg CO2e (5.6%)
Transportation (Scope 3, Cat 4 & 9)	1.005 kg CO2e (2.6%)
End-of-Life (Scope 3, Cat 12 - Credit)	-1.188 kg CO2e

Top Material Carbon Impact (BOM)

Lithium-ion Battery	5.000 kg CO2e (48.7%)
Printed Circuit Board (PCB)	2.700 kg CO2e (26.3%)
Aluminum Heat Sink	1.020 kg CO2e (9.9%)
ABS Plastic Casing	0.925 kg CO2e (9.0%)

Highlights & Key Insights

- The **Use Phase** (25.000 kg CO₂e) is the largest contributor to the product's carbon footprint, emphasizing the critical need for energy-efficient design.
- **Raw Material Acquisition**, particularly the Lithium-ion Battery and PCB, represents a significant upstream hotspot, totaling 10.275 kg CO₂e.
- The company's high **renewable energy usage (70%)** in manufacturing effectively mitigates production emissions, demonstrating proactive environmental stewardship.
- A robust **End-of-Life (EoL) program** and 80% recyclability result in a net carbon credit (-1.188 kg CO₂e), underscoring positive circular economy impact.

Recommendations for Reduction

1. **Enhance Use Phase Efficiency:** Focus on designing for even lower energy consumption during operation with smart energy management and higher efficiency ratings.
2. **Material Optimization:** Investigate alternative, lower-carbon materials for high-impact components like the PCB and battery, or increase recycled content.
3. **Supplier Engagement:** Collaborate with key material suppliers to understand and reduce their upstream emissions through renewable energy adoption or process optimization.
4. **Logistics Optimization:** Continuously optimize transport routes, prioritize sea/rail over air freight, and consolidate shipments to reduce per-unit transportation emissions.
5. **Expand Circularity:** Strengthen take-back and recycling programs, exploring product-as-a-service models or advanced material recovery technologies.