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suxeomyhou

Product Carbon Footprint

Total PCF:

120.26 kg CO2e

Quantity

1.0 unit

System Boundary

factory_gate

Production Country

China

Standard Applied

GHG Protocol

Lifecycle Stage Breakdown

Last-Mile Delivery	83.16%
Use Phase	10.39%
Raw Materials	5.19%
Production (Scope 2)	1.18%
Transport (Upstream)	0.04%
End-of-Life	0.02%

Material Composition vs. Carbon Impact

Plastic Casing (0.5 kg)	28.0%
Aluminum Frame (0.2 kg)	25.6%
Circuit Board (0.1 unit)	24.0%
Battery (0.05 kg)	20.0%
Packaging (0.15 kg)	2.4%

Key Insights & Hotspots

- **Last-Mile Delivery Dominance:** This stage accounts for a staggering 83.16% (100.00 kg CO2e) of the total PCF, making it the most critical area for immediate intervention.
- **Use Phase Impact:** The product's energy consumption during its 5-year lifespan contributes significantly (10.39% / 12.50 kg CO2e), highlighting the need for enhanced energy efficiency.
- **Material Embodied Carbon:** Raw material acquisition and processing contribute 5.19% (6.25 kg CO2e), with Plastic Casing and Aluminum Frame being the largest material-specific contributors.

Recommendations for Reduction

1. **Logistics Optimization:** Implement strategies like route optimization, use of lower-emission vehicles (e.g., electric vans), and shipment consolidation to drastically cut last-mile delivery emissions.
2. **Product Energy Efficiency:** Redesign for lower power consumption during the use phase and promote compatibility with renewable energy sources for consumers.
3. **Sustainable Sourcing:** Increase the use of recycled content and engage with suppliers for low-carbon production processes for high-impact materials.
4. **Circular Economy Integration:** Deepen and quantify the benefits of existing take-back and refurbishment programs to capture avoided emissions and extend product lifespans.

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