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Product Carbon Footprint Analysis for "izivfeykqg"

70.41 kg CO2e per unit

Total Footprint

70.41 kg CO2e

Carbon Intensity

70.41 kg CO2e/unit

Top Material Hotspot

Aluminum Casing (6.80 kg CO2e)

Primary Emission Scope

Scope 3 (Use Phase)

Lifecycle Stage Breakdown

Use Phase	45.63 kg CO2e (61.53%)
Materials (Upstream)	18.57 kg CO2e (25.04%)
Production Energy (Scope 2)	9.00 kg CO2e (12.14%)
Transport (Up/Downstream)	0.96 kg CO2e (1.29%)
End-of-Life (Net Benefit)	-3.75 kg CO2e

Material Carbon Impact Breakdown

Aluminum Casing	6.80 kg CO2e (36.62%)
ABS Plastic Housing	3.84 kg CO2e (20.68%)
Circuit Board (PCB)	3.60 kg CO2e (19.39%)
Lithium-ion Battery	3.60 kg CO2e (19.39%)
Other Materials	0.73 kg CO2e (3.93%)

Key Insights & Hotspots

Use Phase Dominance: The product's operational energy consumption over its 5-year lifespan is the largest emission contributor, accounting for 45.63 kg CO₂e.

Material Impact: Raw material production, particularly for Aluminum, ABS plastic, and electronics, is the second most significant hotspot, totaling 18.57 kg CO₂e.

Production Energy: Despite 40% renewable energy use, the remaining reliance on China's grid mix still contributes 9.00 kg CO₂e, indicating a clear area for further improvement.

End-of-Life Benefit: Effective circularity efforts and recycling initiatives yield a net avoided emission of -3.75 kg CO₂e, demonstrating the positive impact of robust EoL strategies.

Recommendations for Emission Reduction

- 1 Enhance Use Phase Efficiency:** Prioritize design for lower energy consumption during the product's lifespan, potentially through more efficient components or smart power management.
- 2 Material Optimization & Sourcing:** Explore sourcing lower-carbon or increased recycled content for high-impact materials like aluminum and plastics, or redesign for material intensity reduction.
- 3 Increase Renewable Energy in Production:** Further invest in renewable energy sources at the manufacturing facility in China or collaborate with suppliers committed to higher renewable energy mixes.
- 4 Strengthen Circularity Programs:** Leverage and expand the existing take-back program to maximize actual recycling and reuse rates, potentially moving towards remanufacturing or closed-loop systems.
- 5 Granular Data Collection:** Implement primary, supplier-specific data collection for all significant inputs in future assessments to refine accuracy and identify precise reduction opportunities.