carboncalcpcf.com

Product Carbon Footprint: nyskkedjjy

49.45 kg CO2e

Total Product Footprint

Generated: May 24, 2026

Total Footprint

49.45 kg CO2e

Carbon Intensity

52.05 kg CO2e/kg

(Product Weight: 0.95 kg)

Top Material Hotspot

Aluminum Casing

(6.0 kg CO2e)

Primary Emission Scope

Scope 3

(91.22% of Total)

Emission Breakdown by Lifecycle Stage

Lifecycle Stage Contribution (Positive Emissions Base)

Materials Acquisition & Processing	9.30 kg CO2e (17.25%)
Product Manufacturing	4.34 kg CO2e (8.06%)
Transportation (Upstream & Downstream)	0.26 kg CO2e (0.48%)
Product Use Phase	40.00 kg CO2e (74.20%)
End-of-Life (Net Impact)	-4.46 kg CO2e (-9.01% of Total PCF)

Material Carbon Impact (Out of 9.3 kg CO2e total materials)

Aluminum Casing	6.0 kg CO2e (64.5%)
ABS Plastic	1.5 kg CO2e (16.1%)
Electronic Components	1.0 kg CO2e (10.8%)
Copper Wire	0.8 kg CO2e (8.6%)

Key Insights & Hotspots

- **Product Use Phase** is the overwhelming largest contributor, accounting for 40.0 kg CO2e (approximately 80.9%) of the total carbon footprint, highlighting energy consumption during operation.
- **Scope 3 emissions** (Value Chain Emissions) dominate the footprint, representing 91.22% (45.11 kg CO2e) of the total, emphasizing the importance of upstream and downstream impacts.
- The **Aluminum Casing** is identified as the top material hotspot within the Bill of Materials, contributing 6.0 kg CO2e to the materials acquisition phase.
- Despite 30% renewable energy, **Product Manufacturing** contributes 4.34 kg CO2e (8.78%), showing room for further decarbonization of electricity.

Recommendations for Emission Reduction

1. **Enhance Use Phase Efficiency:** Prioritize product design improvements to drastically reduce energy consumption during the 5-year operational lifespan.
2. **Optimize Material Selection & Sourcing:** Investigate and implement alternative, lower-carbon materials for high-impact components like the Aluminum Casing and Electronic Components.
3. **Increase Renewable Energy Adoption:** Further increase the share of renewable energy used in manufacturing facilities to reduce direct production emissions (Scope 2).
4. **Strengthen Circular Economy Initiatives:** Expand and promote take-back programs and explore design-for-disassembly to boost recycling rates beyond 60% and maximize material recovery.
5. **Supply Chain Engagement:** Collaborate actively with upstream suppliers to identify and reduce emissions embedded within their production processes and transportation.