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Product Carbon Footprint for ukrvitsoqq

Company: yvwqkhmegn | **Consultant:** pghvuopvyk

Standard: GHG Protocol | **Boundary:** factory_gate

Total PCF: 53.29 kg CO₂e

Total Product Footprint

53.29 kg CO2e

Carbon Intensity

53.29 kg CO2e/unit

Top Material Hotspot

Aluminum Housing

4.50 kg CO2e

Primary Emission Scope

Scope 3

(Value Chain)

Lifecycle Stage Breakdown

Materials (Scope 3)	11.45 kg CO2e (20.79%)
Production (Scope 2)	0.81 kg CO2e (1.47%)
Logistics (Scope 3)	25.30 kg CO2e (45.95%)
Use Phase (Scope 3)	17.50 kg CO2e (31.78%)

Net End-of-Life Impact: **-1.77 kg CO2e**
(Avoided emissions due to recycling & take-back programs)

Top Material Carbon Impact

Based on Bill of Materials (BOM)

— Aluminum Housing: **4.50 kg CO2e (39.30% of material emissions)**

— Lithium-ion Battery: **3.00 kg CO2e (26.20% of material emissions)**

— Silicon Chipset: **2.50 kg CO2e (21.83% of material emissions)**

Total Material Emissions: 11.45 kg CO2e

Key Emission Hotspots

- **Last-Mile Transportation:** At 25.00 kg CO₂e, it's the largest single contributor, indicating critical logistics optimization needs.
- **Use Phase:** The product's 5-year lifespan contributes 17.50 kg CO₂e, highlighting the importance of energy efficiency.
- **Material Production:** 11.45 kg CO₂e, with aluminum and silicon components being substantial, points to sustainable material sourcing.

Recommendations for Reduction

- **Logistics Optimization:** Implement strategies to reduce last-mile delivery emissions through route optimization, electric vehicles, and local distribution centers.
- **Energy Efficiency in Use:** Design the product for lower energy consumption during its use phase via hardware optimization or power management features.
- **Sustainable Material Sourcing:** Prioritize materials with lower embedded carbon, increase recycled content (especially for aluminum and plastics), and explore bio-based alternatives.
- **Renewable Energy Expansion:** Continue to increase renewable energy usage in manufacturing operations to further reduce Scope 2 emissions.
- **Enhanced Circularity:** Leverage existing circular/take-back programs to maximize material recovery and refurbishment, minimizing waste and virgin resource demand.