Product Carbon Footprint Dashboard

Product: **ilyirmsptl**

Total Product Carbon Footprint

239.64 kg CO_2e

For 1.0 unit, System Boundary: factory_gate

Key Metrics

Total Footprint

239.64 kg CO_2e

Carbon Intensity

239.64 kg CO_2e / unit

Top Material Hotspot

Lithium-ion Battery

5.00 kg CO_2e

Primary Emission Scope

Use Phase

(Scope 3 Downstream)

Carbon Breakdown

Lifecycle Stage Breakdown

Use Phase	95.2% (228.13 kg CO_2e)
Materials	4.1% (9.81 kg CO_2e)
Manufacturing	0.5% (1.14 kg CO_2e)
End-of-Life	0.2% (0.45 kg CO_2e)
Transportation	< 0.1% (0.11 kg CO_2e)

Material Carbon Impact (Relative to Total Material Impact)

Lithium-ion Battery	51.0% (5.00 kg CO_2e)
Circuit Board (PCB)	28.5% (2.80 kg CO_2e)
Housing Plastic (ABS)	17.8% (1.75 kg CO_2e)
Packaging (Cardboard)	1.4% (0.14 kg CO_2e)
Copper Wiring	1.2% (0.12 kg CO_2e)

Key Insights & Hotspots

- ✓ The **Use Phase** is overwhelmingly the most significant contributor to ilyirmsptl's carbon footprint, accounting for approximately 95.2% of total emissions. This is primarily driven by the product's assumed daily energy consumption over its 5-year lifespan.
- ✓ **Raw Material Acquisition** represents the second largest hotspot at 4.1% of total emissions. Within materials, the **Lithium-ion Battery** (5.00 kg CO_2e) and the **Circuit Board (PCB)** (2.80 kg CO_2e) are the most carbon-intensive components, contributing a combined 79.5% of the material impact.
- ✓ Manufacturing, transportation, and end-of-life stages contribute very minimally to the overall PCF, collectively making up less than 1% of the total. This indicates that efforts should be concentrated on the use phase and strategic material choices.

Recommendations for Emission Reduction

- ✓ **Prioritize Use Phase Optimization:** Implement design strategies to drastically reduce the product's energy consumption during its operational lifespan and explore options to extend product durability and lifespan to amortize embodied emissions over a longer period.
- ✓ **Strategic Material Sourcing:** Investigate and integrate lower-carbon alternatives or materials with higher recycled content, focusing initially on the Lithium-ion Battery and Circuit Board, which are the largest material contributors.
- ✓ **Enhance Circularity:** Strengthen and expand existing take-back and recycling programs for ilyirmsptl components to maximize material recovery and reduce end-of-life impacts, aiming for higher actual recycling rates.
- ✓ **Boost Manufacturing Renewable Energy:** Increase the adoption of renewable energy sources and improve energy efficiency in the production facility to further reduce Scope 2 emissions.