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# Product Carbon Footprint Analysis for EcoGadget Pro

Detailed PCF for **mjlqllgrnt** (1.0 unit) · Factory Gate · GHG Protocol

**16.619 kg CO<sub>2</sub>e**

Total Product Footprint

**Total Footprint**

**16.619 kg CO<sub>2</sub>e**

per 1.0 unit of mjlqllgrnt

**Carbon Intensity**

**16.619 kg CO<sub>2</sub>e/unit**

Functional Unit

**Top Material Hotspot**

## Lifecycle Stage Breakdown

Use Phase	12.500 kg CO2e (75.22%)
Materials Acquisition & Processing	2.810 kg CO2e (16.91%)
Downstream Transport	1.268 kg CO2e (7.63%)
Manufacturing (Scope 1 & 2)	0.059 kg CO2e (0.35%)
Upstream Transport	0.018 kg CO2e (0.11%)
End-of-Life	-0.036 kg CO2e (-0.22%) (Net avoided emissions)

## Material Carbon Impact (Illustrative)

Electronic Chip	1.5 kg CO2e (53.38%)
Recycled Aluminum	1.0 kg CO2e (35.59%)
Bio-based Plastic	0.25 kg CO2e (8.90%)
Packaging Cardboard	0.06 kg CO2e (2.14%)

## Key Highlights

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- The **Use Phase** is the dominant emission hotspot, contributing approximately 75% (12.5 kg CO<sub>2</sub>e) of the total Product Carbon Footprint, typical for electronic products.
- **Materials Acquisition & Processing** accounts for a significant 17% (2.81 kg CO<sub>2</sub>e), with the Electronic Chip being the largest material contributor.
- **Scope 3 emissions** represent an overwhelming 99.6% of the total PCF, underscoring the importance of comprehensive value chain assessment.

## Recommendations for Reduction

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- 1 Optimize Use Phase Energy Efficiency:** Focus on product design for even lower energy consumption during active use and explore power-saving modes.
- 2 Enhance Material Circularity:** Investigate higher recycled content, especially for the Electronic Chip, and explore lighter, more sustainable packaging options.
- 3 Decarbonise Logistics:** Explore more efficient and lower-emission transport modes, such as rail or electric vehicles for distribution, and optimize load factors.
- 4 Increase Renewable Energy Sourcing:** Continue to invest in and procure certified renewable energy for manufacturing operations and explore supply chain opportunities.
- 5 Lifecycle Design Integration:** Embed PCF considerations early into product development to make informed decisions on materials, manufacturing, and end-of-life design.

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Disclaimer: Quantitative results are illustrative due to placeholder input parameters.