carboncalcpcf.com

# Product Carbon Footprint Dashboard

**Product:** mvzytysyfl (Smart IoT Sensor)
**Total Carbon Footprint:** 2.3551 kg CO2e/unit

**2.3551**

Total PCF (kg CO2e/unit)

**27.7**

Carbon Intensity (kg CO2e/kg)

**Circuit Board**

Top Material Hotspot

**Scope 3**

Primary Emission Scope (92.7%)

# Emission Breakdown by GHG Scope

## GHG Protocol Scopes

| | |
|---|---|
| Scope 1 (Direct Emissions) | 0.0% |
| Scope 2 (Purchased Energy) | 7.3% |
| Scope 3 (Value Chain Emissions) | 92.7% |

## Lifecycle Stage Contribution (Absolute)

| | |
|---|---|
| Materials Acquisition | 34.0% |
| Manufacturing Production | 7.3% |
| Transportation & Distribution | 0.8% |
| Use Phase | 62.8% |
| End-of-Life (Net Credit) | -4.8% |

# Material Carbon Impact

## Detailed Bill of Materials (BOM)

| | |
|---|---|
| Circuit Board | 62.5% |
| Battery (Li-ion) | 18.8% |
| Plastic Casing | 15.6% |
| Copper Wiring | 3.1% |

## Key Highlights & Hotspots

The **Use Phase** is the largest contributor to the product's footprint, accounting for approximately 59.6% of total emissions, primarily due to energy consumption over its 3-year lifespan.

**Purchased Goods and Services (Materials)** represent the second-largest hotspot at 34.0%, with circuit boards and batteries being the most impactful components.

The company's 60% renewable energy usage in manufacturing helps, but the remaining grid electricity still contributes 7.3% (Scope 2) to the product's footprint.

**End-of-Life recycling programs** provide a significant net credit of -4.8%, demonstrating the positive impact of circular economy initiatives.

# Recommendations for GHG Reduction

**Enhance Use Phase Efficiency:**

- Invest in R&D for even lower energy consumption during operational lifespan.
- Explore software updates or power management features.

**Optimize Material Sourcing and Design:**

- Engage with suppliers for lower-carbon materials, especially for circuit boards and batteries.
- Investigate alternative materials with lower inherent carbon footprints or higher recycled content.

**Increase Renewable Energy in Manufacturing:**

- Further increase renewable energy at the China manufacturing facility.
- Collaborate with manufacturing partners for cleaner energy sources.

**Strengthen Circular Economy Programs:**

- Expand and promote take-back and recycling programs (wmrdtwtgrh).
- Work with recyclers to improve efficiency and reach for electronic components.

**Supply Chain Engagement:**

- Collaborate with transport providers to optimize routes and utilize more fuel-efficient modes.
- Collect more specific, primary data from upstream suppliers.