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carboncalcpcf.com

Product Carbon Footprint for Smart IoT Sensor

Total PCF (kgCO2e/unit)

142.48

TOTAL FOOTPRINT

142.48 kgCO2e

CARBON INTENSITY

142.48 kgCO2e/unit

TOP MATERIAL HOTSPOT

ABS Plastic Casing

0.47 kgCO2e

PRIMARY EMISSION SCOPE

Scope 3

Use Phase Dominance

Lifecycle Carbon Impact

Emissions by Lifecycle Stage (kgCO2e)

*Percentages for bars are relative to total positive emissions (142.72 kgCO2e) for visualization scale.

Material Carbon Impact

Top Materials by Emissions (kgCO2e)

*Percentages for bars are relative to total material emissions (1.16 kgCO2e).

Key Insights

- The **Use Phase** is the overwhelming driver of the Smart IoT Sensor's carbon footprint, accounting for approximately 97.7% of total emissions.
- **Manufacturing** (materials and production energy) collectively represents a smaller but significant portion (approx. 2.4%) of the product's overall carbon impact.
- Strong **circularity initiatives**, including high recyclability and take-back programs, result in a beneficial net negative emission (credit) for the End-of-Life phase.

Recommendations for Reduction

2. **Prioritize Use Phase Efficiency:** Focus on product design innovations that significantly reduce energy consumption during the 5-year lifespan of the sensor.
4. **Promote Renewable Energy Adoption in Use:** Investigate options to encourage end-users to power their devices with renewable energy sources.
6. **Supply Chain Engagement:** Collaborate with material suppliers to identify and source lower-carbon materials and enhance transparency in their Scope 1 & 2 emissions.
8. **Optimize Manufacturing Energy:** Continue efforts to increase renewable energy usage in own and tier-1 supplier manufacturing operations beyond the current 60%.
10. **Enhance Circularity:** Further expand and promote established take-back and recycling programs, ensuring high collection and processing rates for all materials.