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carboncalcpcf.com

Product Carbon Footprint: wxkxnltxpj

Report Date: May 31, 2026

Total Product Carbon Footprint

~127.20 kg CO_2e

per 1.0 unit (factory_gate)

1.0 unit

FUNCTIONAL UNIT

factory_gate

SYSTEM BOUNDARY

Lifecycle Stage Breakdown

Material Acquisition & Pre-processing	81.66 kg CO_2e (64.2%)
Manufacturing (Scope 1 & 2)	4.34 kg CO_2e (3.4%)
Transport to Customer	0.50 kg CO_2e (0.4%)
Use Phase	41.50 kg CO_2e (32.6%)
End-of-Life (Recycling Credit)	-0.80 kg CO_2e (-0.6%)

GHG Protocol Scope Breakdown

Scope 1: Direct Emissions	0.00 kg CO_2e (0.0%)
Scope 2: Purchased Energy (Manufacturing)	4.34 kg CO_2e (~3.4%)
Scope 3: Value Chain (Upstream & Downstream)	122.86 kg CO_2e (~96.6%)

Top Material Carbon Impact (from total material emissions)

Aluminium Alloy Sheet	~85.7%
Polypropylene Granules	~6.1%
Silicon Wafer	~6.1%

Key Insights & Hotspots

- Material Acquisition & Pre-processing (64.2%) is the dominant emission source, primarily driven by high-impact materials like Aluminium Alloy Sheet.
- The Use Phase (32.6%) represents the second largest hotspot, highlighting the importance of product energy efficiency.
- Scope 3 emissions account for a substantial 96.6% of the total footprint, underlining the critical role of value chain engagement.

Recommendations for Carbon Reduction

1. **Data Refinement:** Collect precise primary data for BOM, transport, and use phase energy consumption to improve accuracy.
2. **Material Optimization:** Prioritize sourcing lower-carbon or higher recycled content for high-impact materials (e.g., Aluminium Alloy).
3. **Energy Efficiency:** Invest in product design innovations to significantly reduce energy consumption during the product's lifespan.
4. **Manufacturing Transition:** Accelerate the transition to 100% renewable energy at the production facility in China.
5. **Circular Economy:** Strengthen and expand take-back/recycling programs to maximize material recovery and avoided emissions.