

carboncalcpcf.com

Product Carbon Footprint for onnwhxqjkd

Total Cradle-to-Grave PCF: **21.99 kg CO₂e**

Report for 1.0 unit · GHG Protocol · factory_gate (extended to Cradle-to-Grave)

21.99

Total Carbon Footprint (kg CO₂e)

21.99

Carbon Intensity (kg CO₂e / unit)

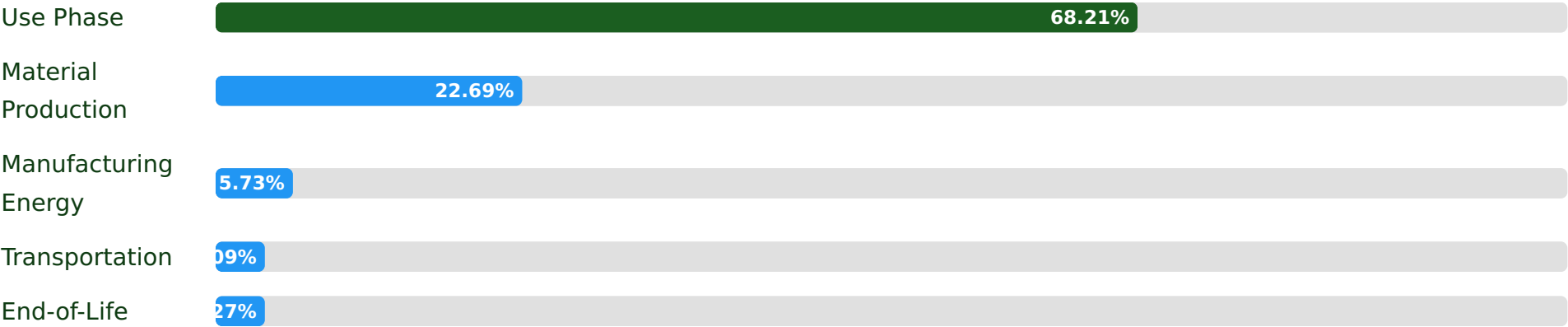
Scope 3

Primary Emission Scope (20.73 kg CO₂e)

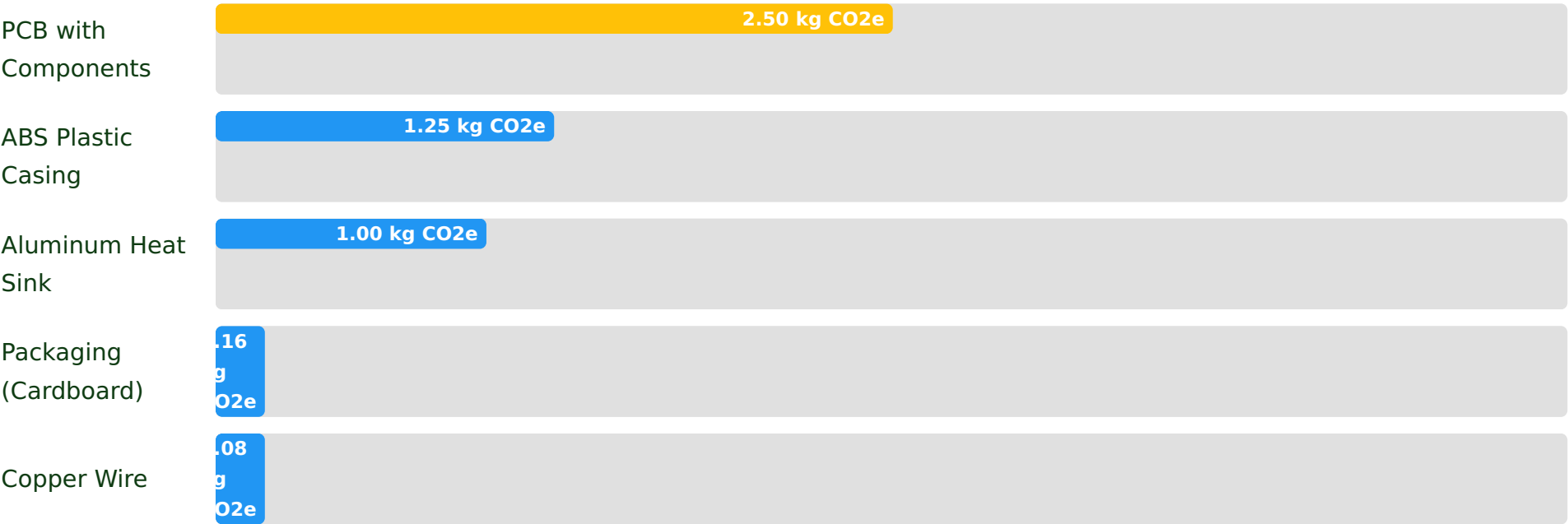
Use Phase

Top Hotspot (68.21%)

Lifecycle Stage Breakdown



Top Material Carbon Impact



Key Highlights

- The ****Use Phase**** is the most significant contributor to the product's carbon footprint, accounting for approximately 68.21% of total emissions, primarily due to energy consumption over its 5-year lifespan.
- ****Material Production**** is the second largest hotspot (22.69%), with electronics (PCB), ABS plastic, and aluminum being key contributors.
- ****Scope 3 (Value Chain) emissions**** overwhelmingly dominate, comprising 20.73 kg CO2e out of the total 21.99 kg CO2e, highlighting the importance of upstream and downstream activities.

How to Reduce Carbon Footprint

1. **Optimize Use Phase Energy Efficiency:** Implement design improvements, software optimizations, or power-saving modes to significantly reduce the product's energy consumption during operation.
2. **Sustainable Material Sourcing:** Investigate and source lower-carbon alternative materials for components like ABS plastic casing, aluminum heat sink, and PCBs, and explore options with higher recycled content.
3. **Enhance Circular Economy Initiatives:** Strengthen the existing take-back program to maximize repair, refurbishment, and high-quality material recycling rates, reducing reliance on virgin materials.
4. **Renewable Energy Expansion:** Increase the percentage of renewable energy used in production beyond the current 60% or invest in off-site renewable energy projects to further reduce Scope 2 emissions.
5. **Logistics Optimization:** Review transportation routes and modes for raw materials and finished products, prioritizing lower-emission alternatives such as rail over road for longer distances.