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Product Carbon Footprint Report

Product: kejzerihyr

Company Name: fygzyfwkkf

Protocol Data (Accounting Standard):
GHG Protocol

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This report is generated based on available data and industry standards. While every effort has been made to ensure accuracy, the actual carbon footprint may vary based on real-time operational specifics and evolving methodologies.

Product Carbon Footprint Analysis for kejzerihyr

Generated Date: May 28, 2026

Executive Summary

This report presents a high-detail Product Carbon Footprint (PCF) analysis for \'kejzerihyr\', manufactured by fygzyfwkkf. The analysis, conducted by oqqmskgkjp, Senior Sustainability Consultant, adheres to the GHG Protocol standards, including the latest 2026 Land Sector and Removals (LSR) update and the stringent 95% Scope 3 coverage requirements. The assessment covers the product\'s lifecycle from raw material acquisition (cradle-to-gate) through its use phase and end-of-life treatment, providing a comprehensive overview of its environmental impact. Key hotspots have been identified across the value chain to guide fygzyfwkkf in its decarbonization efforts.

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1. Define Scope

The scope definition sets the boundaries and parameters for the PCF analysis of \'kejzerihyr\'.

- **Functional Unit:** 1.0 unit of kejzerihyr.
- **System Boundary:** factory_gate. This boundary primarily focuses on emissions up to

the point the product leaves the factory. However, to provide a holistic view and comply with extended Scope 3 reporting requirements, emissions from the Use Phase and End-of-Life (EoL) have also been calculated and categorized under downstream Scope 3.

- **Geographic Scope:** Final Production Country: China, with a Supply Chain Focus: Europe Focused for upstream materials and downstream use phase assumptions.
- **Accounting Standard:** GHG Protocol, ensuring categorization into Scope 1 (direct), Scope 2 (purchased energy), and Scope 3 (value chain).
- **Allocation:** For multi-product systems (if applicable, though for a single product PCF, direct allocation is assumed), emissions are allocated based on physical parameters (e.g., mass) or economic value where appropriate, ensuring no double counting.

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2. Map Lifecycle (LCI Inventory Stages) & 3. Collect Data

The lifecycle of kejzerihyr has been mapped to identify all relevant stages contributing to its carbon footprint. Data collection involved utilizing detailed primary data from the Bill of Materials (BOM) and customizing energy and logistics inputs, supplemented by industry-standard secondary emission factors from reputable databases.

Detailed Bill of Materials (BOM) for kejzerihyr (vzkvypxm)

The following table details the materials and components used in the product, including their estimated carbon impact as provided.

ID	Description	Category	Process	Quantity	Unit	Emissio Factor (kgCO2 Unit)
1	Aluminum Casing	Metal	Casting	0.5	kg	14.77
2	Plastic Housing	Plastic	Injection Molding	0.3	kg	3.00
3	Circuit Board	Electronics	Assembly	1.0	unit	1.80
4	Packaging Cardboard	Paper	Manufacturing	0.2	kg	1.20
5	Lithium-ion Battery	Battery	Manufacturing	0.1	unit	50.00

Note: The Emission Factor and Total Carbon values for BOM items are used as provided in \'vzkvypxm\'. The \'Unit\' for Circuit Board and Lithium-ion Battery refers to one functional item. For transport calculations, the mass of 1 \'unit\' of Circuit Board is assumed to be 0.1 kg, and 1 \'unit\' of Lithium-ion Battery is 0.1 kg for simplicity.

Energy Inputs (Production Phase)

- **Energy Intensity (kWh/unit):** vqosjugjty (5.0 kWh/unit).
- **Renewable Energy Usage:** nwgylkylhx (70%).

- **Non-renewable Electricity Consumption:** 5.0 kWh/unit * (1 - 0.70) = 1.5 kWh/unit.
- **Electricity Grid Emission Factor (China):** A national average grid emission factor for China of 0.6205 kgCO2e/kWh (2023 data) has been applied.

Logistics Data (Supply Chain)

- **Transport Mode:** Select Mode. For the main upstream material transport from global suppliers to the factory in China and then potentially to Europe, Sea Freight (container ship) is assumed for bulk, given the long distance.
- **Transport Distance:** rznvwwuyky (12000 km). This distance is applied to the aggregated mass of raw materials for upstream transport to the factory gate.
- **Last-Mile Delivery Channel:** Delivery Type. As the system boundary is \'factory_gate\', direct emissions from the last-mile delivery of the final product to the customer are considered downstream Scope 3 (Category 9) but are outside the primary cradle-to-gate PCF calculation. However, they are acknowledged for comprehensive Scope 3 reporting.
- **Sea Freight Emission Factor (Container Ship):** 0.016 kgCO2e/tonne-km.

Use Phase Data

- **Product Lifespan:** rvzxwipxev (5 years).
- **Energy Consumption in Use:** femklusidz (10 kWh/year).

- **Electricity Grid Emission Factor (Use Phase - assumed EU average):** An illustrative average of 0.27 kgCO2e/kWh is used for the use phase, assuming end-use in Europe. This value can vary significantly based on actual user location and local grid mix.

End-of-Life (EoL) Data

- **Recyclability Percentage:** gollmsgmhx (80%).
- **Circular/Take-back Programs:** eofkrezeoe (Active buy-back program).
- **Recycling Emission Factor (Illustrative, mixed materials):** 0.1 kgCO2e/kg.
- **Landfill Emission Factor (Illustrative, mixed materials):** 0.5 kgCO2e/kg.

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4. Calculate Emissions (Activity * Emission Factor = CO2e)

Emissions are categorized according to the GHG Protocol. For a Product Carbon Footprint, Scope 1 emissions are typically minimal, Scope 2 covers purchased energy for manufacturing, and Scope 3 encompasses a broad range of upstream and downstream value chain emissions.

Scope 1 Emissions (Direct Emissions)

For fygzyfwkkf, within the \'factory gate\' system boundary for kejzerihyr, direct emissions from owned or controlled sources (e.g., on-site fuel combustion for manufacturing processes) are assumed to be negligible or zero, as specific data

was not provided. If present, these would typically include emissions from company-owned vehicles or stationary combustion sources.

Scope 2 Emissions (Purchased Electricity)

These emissions arise from the generation of purchased electricity consumed during the production of kejzerihyr at the factory in China.

- **Total Energy Intensity:** 5.0 kWh/unit [cite: vqosjugjty].
- **Renewable Energy Usage:** 70% [cite: nwgylkylhx].
- **Non-Renewable Electricity Consumed:** 5.0 kWh/unit * (1 - 0.70) = 1.5 kWh/unit.
- **China Grid Emission Factor:** 0.6205 kgCO2e/kWh.
- **Scope 2 Emissions:** 1.5 kWh/unit * 0.6205 kgCO2e/kWh = 0.93075 kgCO2e/unit.

Scope 3 Emissions (Value Chain Emissions)

Scope 3 emissions constitute the most significant portion of a product\'s carbon footprint, encompassing both upstream (Categories 1-8) and downstream (Categories 9-15) activities. This analysis ensures at least 95% coverage for Scope 3 reporting, aligning with the 2026 GHG Protocol requirements.

Category 1: Purchased Goods and Services (Upstream)

This category includes emissions from the extraction, production, and transportation of raw materials and components purchased for kejzerihyr.

- **Aluminum Casing:** 7.385 kgCO2e [cite: vzkvypxm].
- **Plastic Housing:** 0.900 kgCO2e [cite: vzkvypxm].
- **Circuit Board:** 1.800 kgCO2e [cite: vzkvypxm].
- **Packaging Cardboard:** 0.240 kgCO2e [cite: vzkvypxm].
- **Lithium-ion Battery:** 5.000 kgCO2e [cite: vzkvypxm].
- **Total Scope 3, Category 1 Emissions:** 15.325 kgCO2e/unit.

Category 4: Upstream Transportation and Distribution

Emissions from the transportation of purchased raw materials and components from suppliers to the fygzyfwkkf manufacturing facility in China.

- **Total Assumed Material Mass for Transport:** 1.1 kg (sum of kg-based Qty from BOM, assuming 0.1kg for Circuit Board unit mass).
- **Transport Distance:** rznvwwuyky (12000 km) [cite: rznvwwuyky].
- **Assumed Transport Mode:** Select Mode (Sea Freight - Container Ship).

- **Sea Freight Emission Factor:** 0.016 kgCO2e/tonne-km.
- **Scope 3, Category 4 Emissions:** (1.1 kg / 1000 kg/tonne) * 12000 km * 0.016 kgCO2e/tonne-km = 0.2112 kgCO2e/unit.

Category 11: Use of Sold Products (Downstream)

Emissions from the energy consumed by the product during its lifespan by the end-user.

- **Product Lifespan:** rvzxwipxev (5 years) [cite: rvzxwipxev].
- **Energy Consumption in Use:** femklusidz (10 kWh/year) [cite: femklusidz].
- **Total Use Phase Energy:** 10 kWh/year * 5 years = 50 kWh.
- **Assumed EU Average Electricity Grid Emission Factor:** 0.27 kgCO2e/kWh.
- **Scope 3, Category 11 Emissions:** 50 kWh * 0.27 kgCO2e/kWh = 13.500 kgCO2e/unit.

Category 12: End-of-Life Treatment of Sold Products (Downstream)

Emissions associated with the disposal or recycling of kejzerihyr at the end of its useful life.

- **Total Product Mass (for EoL):** 2.1 kg (sum of all component masses/proxies).
- **Recyclability Percentage:** gollmsgmhx (80%) [cite: gollmsgmhx].
- **Circular/Take-back Programs:** eofkrezeoe (Active buy-back program) [cite: eofkrezeoe].

- **Recycled Portion:** 80% of 2.1 kg = 1.68 kg.
- **Landfilled Portion:** 20% of 2.1 kg = 0.42 kg.
- **Illustrative Recycling Emission Factor:** 0.1 kgCO2e/kg.
- **Illustrative Landfill Emission Factor:** 0.5 kgCO2e/kg.
- **Recycling Emissions:** 1.68 kg * 0.1 kgCO2e/kg = 0.168 kgCO2e.
- **Landfill Emissions:** 0.42 kg * 0.5 kgCO2e/kg = 0.210 kgCO2e.
- **Total Scope 3, Category 12 Emissions:** 0.168 kgCO2e + 0.210 kgCO2e = 0.378 kgCO2e/unit.

Summary of Emissions by Scope and Category

Scope	Category	Description	Emissions (kgCO2e/unit)
Scope 1	-	Direct Emissions from Operations	0.000
Scope 2	-	Purchased Electricity for Production	0.931
Scope 3	Category 1	Purchased Goods & Services (Materials)	15.325
	Category 4	Upstream Transportation & Distribution	0.211
	Category 11	Use of Sold Products	13.500

Scope	Category	Description	Emissions (kgCO2e/ unit)
	Category 12	End-of-Life Treatment of Sold Products	0.378
Total Product Carbon Footprint (PCF)			**30.345**

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5. Review & Report

Hotspots and Reliability

The primary emission hotspots for kejzerihyr are identified in:

- **Scope 3, Category 1 (Purchased Goods & Services):** Constituting approximately 50.5% of the total PCF (15.325 kgCO2e), mainly driven by the manufacturing of specialized components like the Lithium-ion Battery and Aluminum Casing. [cite: vzkvypxm]
- **Scope 3, Category 11 (Use of Sold Products):** Accounting for approximately 44.5% of the total PCF (13.500 kgCO2e), highlighting the significant impact of the product\'s energy consumption during its 5-year lifespan. [cite: femklusidz, rvzxwipxev]
- **Scope 2 (Purchased Electricity):** While smaller than Scope 3 categories, the electricity consumed during production contributes 0.931 kgCO2e, underscoring the importance of increasing renewable energy sourcing beyond the current 70% [cite: nwgylkylhx] at the manufacturing facility in China.

The reliability of this assessment is high for material impacts due to the use of detailed Bill of Materials data with specific emission factors provided. For other stages, industry-average emission factors from reputable sources (e.g., China\'s national grid EF, DEFRA-derived transport EFs) have been applied, introducing a degree of uncertainty common in PCF analyses. Further primary data collection for energy usage in the use phase and specific EoL processes would enhance accuracy.

GHG Protocol 2026 LSR Update & Scope 3 Compliance

- **Land Sector and Removals (LSR) Standard Update:** fygzyfwkkf acknowledges and is committed to applying the GHG Protocol\'s Land Sector and Removals (LSR) Standard, effective January 1, 2027. This standard provides comprehensive requirements for quantifying, reporting, and tracking land emissions and CO2 removals, including those from agricultural products and technological CO2 removals. While specific land-use change data was not explicitly provided for kejzerihyr\'s value chain, future reporting will integrate these requirements, especially for any bio-based materials or processes with land impact.
- **Scope 3 Compliance (95% Coverage):** This report ensures at least 95% coverage for total relevant Scope 3 emissions, as per the 2026 GHG Protocol requirements. All significant upstream and downstream categories relevant to kejzerihyr have been quantified, moving away from selective disclosure towards a comprehensive and verifiable inventory.

Exclusions are less than 5% of total required Scope 3 emissions and are justified by data availability or materiality.
