REPORT BILAN CARBONE®

PERDELLE

PERDELLE®

CONCEPTEUR DE SIMPLICITÉ

Year 2025

Based on 2024-2025 figures

Service provider:

LITA
EXPERTISE COMPTABLE
par nature

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1. Introduction and company presentation

1.1 Presentation of PERDELLE

PERDELLE is a company based in Besançon (4 chemin de Palente, 25000 Besançon).

It designs and manufactures ergonomic devices intended to improve workstation setup, in particular the “Perdelle Néo Device” and the “Perdelle Swan Device”, which provide arm and shoulder support to prevent musculoskeletal disorders (MSDs) among workers, whether seated or standing.

The company operates in various sectors: manufacturing industry, leather goods, assembly, inspection stations, etc.

From a legal standpoint, PERDELLE is a SASU (single-shareholder simplified joint-stock company) registered with the Besançon Trade and Companies Register under number 953 865 581.

1.2 Objectives of the Carbon Footprint®

The objective of this Carbon Footprint® is to:

- measure the overall carbon footprint of PERDELLE’s business activity over the reference year (in this case, financial year 07/2024-06/2025);
- identify the main emission sources (energy, capital goods, material purchases, service purchases, transport, end of life);
- establish a baseline as part of the company’s CSR strategy, in order to prioritize actions to reduce greenhouse gas (GHG) emissions;
- serve as a reference for monitoring future reductions and, where appropriate, for communication with stakeholders (customers, suppliers, possible labels or reporting obligations).

1.3 Methodology and sources used

To carry out this assessment, we relied on the Carbon Footprint® methodology (ADEME and ABC) and on the good practices of the GHG Protocol (Scopes 1-2-3).

The sources of emission factors and activity data are:

- ADEME’s Base Carbone® (French national emission factor database),
- additional sector references (e.g. studies by Carbone 4),
- and PERDELLE’s internal activity data (quantities, expenditures, material weights, etc.).

Emission categories are allocated according to the organizational and operational boundaries (Scopes 1 to 3). The assessment also incorporates uncertainties by category (qualitative and quantitative) in accordance with the methodology’s recommendations.

A methodological appendix details the emission factors used.

This Carbon Footprint® was prepared by the accounting firm LITA, under the supervision of Jean-Louis Lacoste, a chartered accountant certified in the Carbon Footprint® methodology.

Within PERDELLE, the company president, Mr Fabrice Frérot, oversaw the monitoring of the work.

2. Scope of the study

2.1 Organizational scope

This Carbon Footprint® covers all activities of PERDELLE, whose head office and production site are located at:

4 chemin de Palente, 25000 Besançon (France).

PERDELLE designs, assembles and markets ergonomic solutions intended to reduce musculoskeletal disorders in workstations. All management operations are centralized at this single site. Assembly and cutting services are performed by service providers.

No other legal entity, secondary establishment or external production site was directly included within the organizational scope; however, subcontractors and external service providers working on behalf of PERDELLE are considered under Scope 3 as purchases of goods and services.

2.2 Time scope

The assessment covers the reference period from 1 July 2024 to 30 June 2025.

This choice makes it possible to cover a full business cycle representative of the annual production level, while aligning with the accounting period and the most recent available data (invoices, consumption, travel, subcontracting).

Data from this period were prioritized in order to ensure temporal consistency between physical flows (energy, materials) and financial flows (service purchases).

2.3 Operational scope

The operational scope is defined in accordance with the Carbon Footprint® methodology, according to three levels:

Scope	Type of emissions	Examples included within PERDELLE's scope
Scope 1	Direct GHG emissions from fixed or mobile sources controlled by PERDELLE	Combustion of fossil fuels (e.g. heating, small equipment), fuel used by any company vehicles (in this case, fuel used for rented vehicles)
Scope 2	Indirect emissions linked to purchased and consumed energy	Electricity consumption (average French mix), used for machines, lighting and offices
Scope 3	Other indirect emissions not included in Scopes 1 and 2	Purchases of raw materials and components (steel, plastic, wood, aluminum, etc.), service purchases (subcontracting, maintenance, transport, consulting, etc.), inbound/outbound freight, business travel and commuting, product end of life, waste

All of these categories were assessed using the Base Empreinte®, giving priority to actual activity data from internal systems (material weights, consumption, amounts spent, distances traveled). Scope 3 emissions, which are highly representative of PERDELLE's business model (extensive subcontracting and outsourcing), logically account for the majority of the total footprint.

3. Results of the Carbon Footprint®

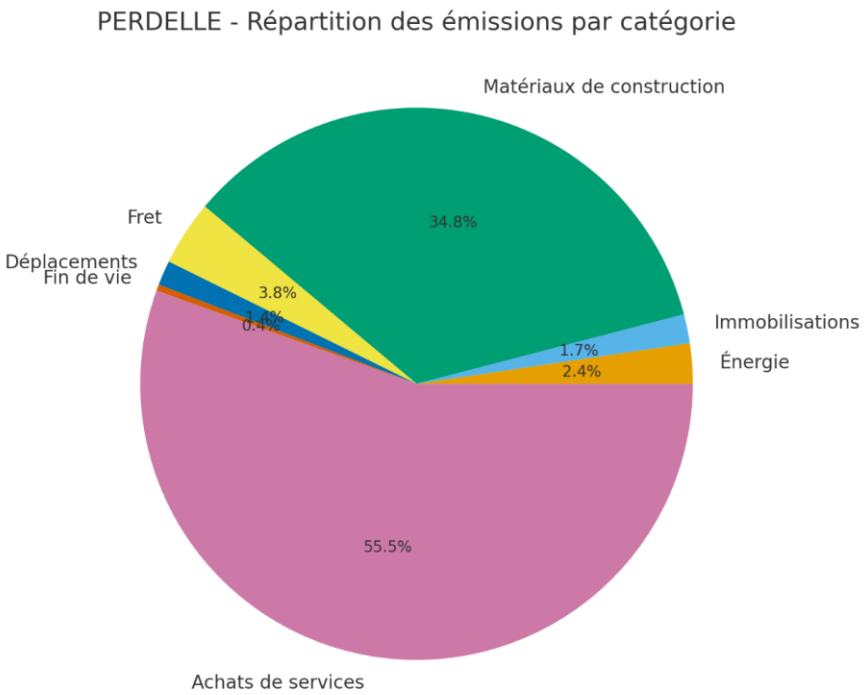
3.1 Detailed results by emission category

PERDELLE's Carbon Footprint®, carried out over the period July 2024 - June 2025, results in total emissions of 24.7 tonnes of CO2 equivalent (tCO2e).

Emission categories are broken down as follows:

Category	Emissions (kgCO2e)	Emissions (tCO2e)	Share of total	Average uncertainty
Energy	583	0.6	2%	± 10%
Capital goods	420	0.4	2%	± 67%
Construction materials and inputs	8,621	8.6	35%	± 10%
Freight and logistics	943	0.9	4%	± 47%

Travel (business and commuting)	357	0.36	1%	± 26%
End of life and waste	92	0.09	< 1%	± 88%
Service purchases	13,729	13.7	56%	± 30%
TOTAL	24,745	24.7 tCO2e	100%	-



Service purchases (subcontracting, maintenance, vehicle rental, consulting, meals, communication) represent the largest emission category, reflecting PERDELLE's dependence on external service providers for cutting, logistics and support activities.

Material inputs (especially steel and plastic) make up the second-largest category, linked to the manufacture of Perdelle devices.

3.2 Analytical results

This analysis aims to estimate the unit carbon footprint of the main Perdelle device models.

The objective is to understand the emission structure associated with each product, identify the most contributory materials, and highlight the priority reduction levers for future product ranges.

The calculations were carried out per unit of product, on the basis of masses and emission factors from Base Carbone® (ADEME, 2023).

The data presented exclude any sensitive information (quantities produced, sales volumes, costs) in order to focus exclusively on the intrinsic carbon intensity of the products.

Excluding “indirect carbon overhead”, the following analytical material information is obtained:

3.2.1 Analytical result - Perdelle Néo device (per unit)

Carbon intensity

12.27 kgCO2e / Perdelle Néo device excluding indirect overhead

37.54 kgCO2e / Perdelle Néo device including indirect overhead

Analysis

The Perdelle Néo device is characterized by a structure with high metal density: more than 85% of its footprint comes from the steel used for arches, fasteners and load-bearing components.

Polymer materials (plastics and rubber) account for around 9% of the impact, while single-use components (packaging, foam, labels) remain marginal.

This profile reflects a robust product but one that is energy-intensive to manufacture, for which decarbonization will depend primarily on recycled steel content and on material optimization of structural parts.

Breakdown by material (per unit)

Material	**Emissions (kgCO2e)**	**Share**
Steel	approx. 10.54	approx. 86%
Plastics (parts, drum, end caps, tensioners, bags, etc.)	0.54	approx. 4.4%
Rubber (elastic bands)	0.54	approx. 4.4%
Foam (ergonomic arm straps)	0.20	approx. 1.6%
Cardboard (main packaging)	0.31	approx. 2.5%

Steel + plastic composites (indexable handles)	0.14	approx. 1.1%
Paper, labels, flyers	<0.01	approx. 0.1%
Total	12.27	100%

3.2.2 Analytical result - Perdelle Swan device (per unit)

Carbon intensity

13.75 kgCO2e / Perdelle Swan device excluding indirect overhead

39.02 kgCO2e / Perdelle Swan device including indirect overhead

Analysis

The carbon profile of the Swan device is close to that of the Néo device, but slightly higher (+1.5 kgCO2e), due to a heavier metal structure and the presence of aluminum components, a particularly emissive material (approx. 7.8 kgCO2e/kg).

Plastics and rubber remain secondary but non-negligible categories.

Reduction efforts could focus on:

Breakdown by material (per unit)

Material	**Emissions (kgCO2e)**	**Share**
Steel	approx. 11.8	approx. 86%
Plastics (injection-molded parts, drum, end caps, cable ties, etc.)	0.77	approx. 5.6%
Rubber (elastic bands)	0.54	approx. 3.9%
Foam (ergonomic arm straps)	0.19	approx. 1.4%
Cardboard (main packaging)	0.31	approx. 2.3%
Aluminum (jaw component)	0.35	approx. 2.5%
Steel + plastic composites (indexable handles)	0.06	approx. 0.4%

Wood, paper, label	< 0.01	approx. 0.1%
Total	13.75	100%

- reducing the weight of metal sub-assemblies,
- replacing aluminum,
- and incorporating low-carbon steel (electric route or hydrogen route).

3.2.3 Analytical result - Perdelle Taya device (per unit)

Carbon intensity

6.54 kgCO2e / Perdelle Taya device excluding indirect overhead

31.81 kgCO2e / Perdelle Taya device including indirect overhead

Analysis

The Taya A device shows a per-unit carbon footprint for direct inputs that is half that of the Néo and Swan devices.

This performance is explained by:

Breakdown by material (per unit)

Material	**Emissions (kgCO2e)**	**Share**
Steel	approx. 4.9	approx. 75%
Plastics (parts, drum, end caps, protective foam)	0.65	approx. 10%
Wood / beech (structural elements)	0.23	approx. 3.5%
Rubber (elastic bands)	0.54	approx. 8%
Foam (arm straps)	0.19	approx. 3%
Cardboard / paper (packaging and documents)	0.03	approx. 0.5%
Aluminum (jaw component)	0.78	approx. 12%
Steel + plastic composites (chrome handle)	0.14	approx. 2%

Total	6.54	100%

- a more compact structure,
- a lower steel mass,
- and the presence of wood components with low carbon intensity.

The share of aluminum (approx. 12%) remains a category to monitor, while the remaining materials contribute in a balanced way.

The Taya device therefore constitutes a more frugal design model, demonstrating the environmental improvement potential of the PERDELLE range.

Interpretation

- Each Perdelle device sold in 2024-2025 therefore has a carbon footprint between 31.81 and 39.02 kgCO2e, of which:
- 2/3 are indirect emissions (services and site operations),
- 1/3 are direct emissions (materials and components).

This proportion is characteristic of an outsourced production model with high service intensity (suppliers, maintenance, transport, etc.).

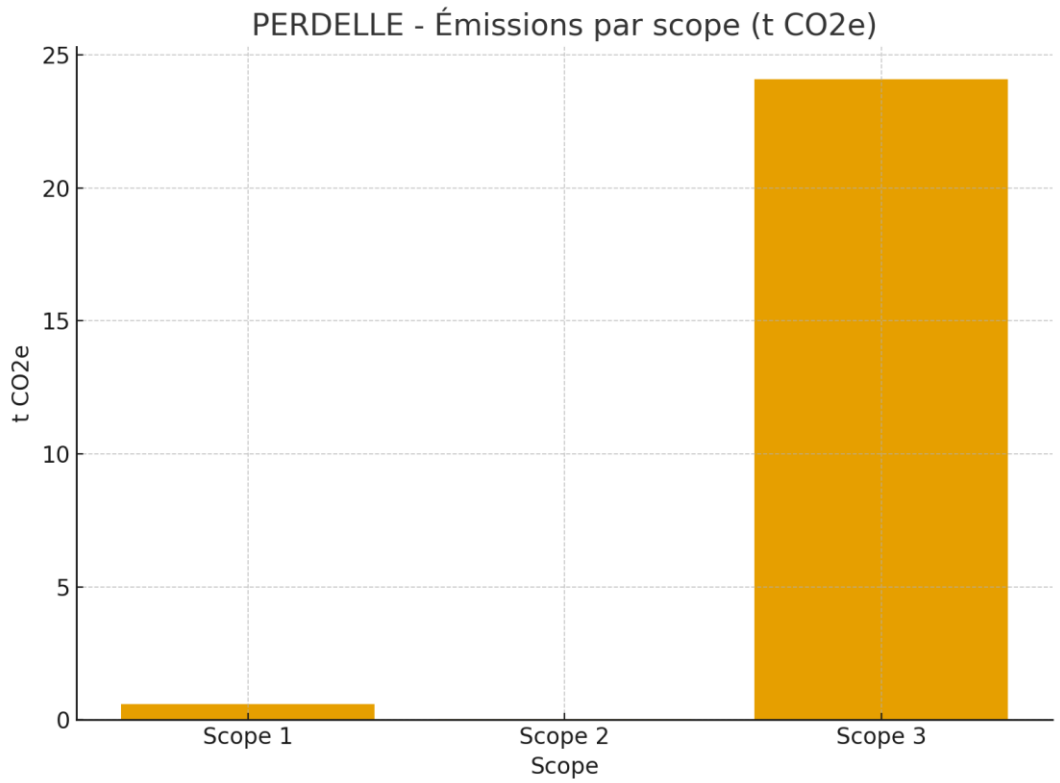
3.3 Consolidated total

Consolidated emissions amount to 24.7 tCO2e across all categories.

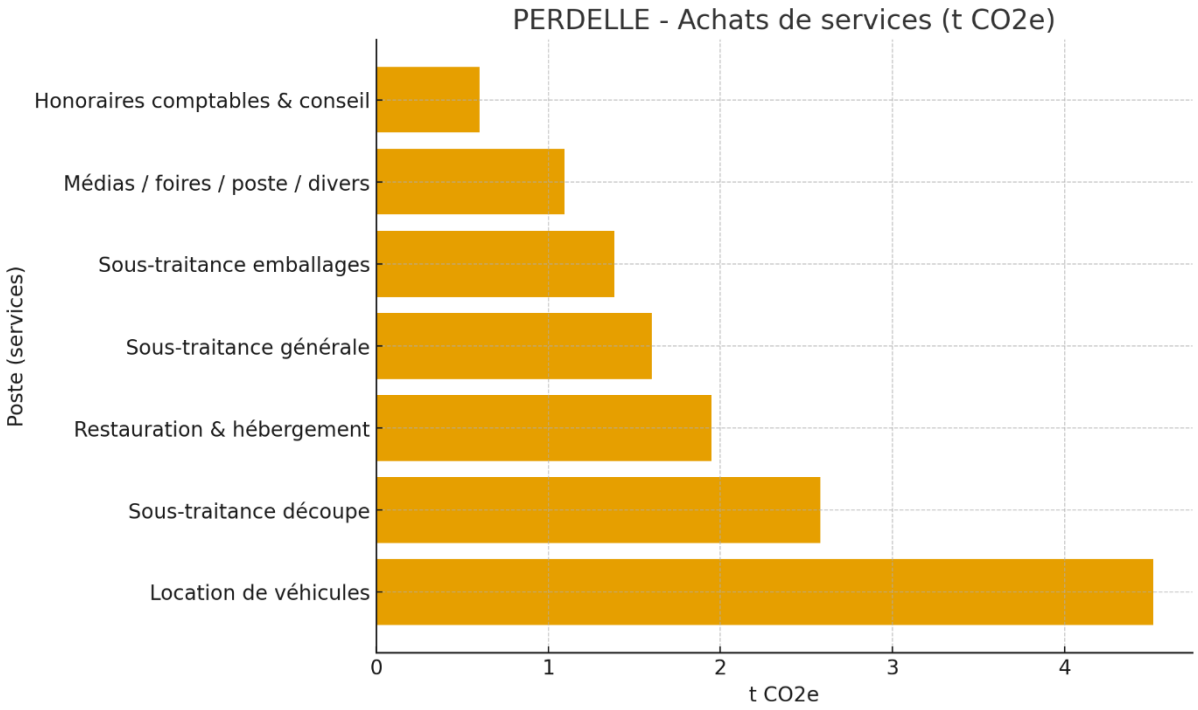
This figure is representative of a light industrial activity with a high degree of outsourcing.

PERDELLE's carbon structure is broken down as follows:

- Scope 3: 97% of total emissions,
- Scope 1: 2%,
- Scope 2: < 1%.



This dominance of Scope 3 illustrates the nature of the business model: few direct emissions (no heavy processes and no in-house fleet), but a significant footprint related to purchases, transport and subcontracting.



3.3 Uncertainties and reliability analysis

The uncertainty analysis follows the recommendations of the Carbon Footprint® methodology.

Overall, the reliability of the consolidated result is good, with a weighted average uncertainty estimated at ±25%, which remains consistent with the standards for a first Carbon Footprint® assessment for a very small business. This uncertainty mainly comes from services.

Uncertainty level	Meaning	Relevant categories
Very low (< 10%)	Measured data and precise factors	Energy (electricity, fuels)
Low (10 - 25%)	Known data, little variability	Plastics, cardboard, outbound freight
Medium (25 - 50%)	Monetary or partial estimates	Service purchases, travel
High (> 50%)	Flat-rate or uncertain data	Capital goods, end of life

The greatest areas for improvement concern:

- carbon documentation from subcontractors and suppliers;
- traceability of waste and inbound transport.

3.4 Breakdown by Scope

Scope	Type of emissions	Emissions (tCO2e)	Share
Scope 1	Direct emissions (combustion, fuels)	0.6	2%
Scope 2	Purchased electricity	0.04	< 1%
Scope 3	Other indirect emissions (purchases, freight, services, travel, waste)	24.1	97%
TOTAL		24.74 tCO2e	100%

Scope 3 is predominant. Reduction efforts should therefore focus on the supply chain (materials and service providers) and logistics.

4. Analysis and interpretation

4.1 Main emission categories

The overall analysis shows that PERDELLE's greenhouse gas emissions over the period July 2024 - June 2025 amount to 24.7 tCO2e, broken down as follows:

- Service purchases: 13.7 tCO2e (56%)
- Material inputs: 8.6 tCO2e (35%)
- Freight and logistics: 0.9 tCO2e (4%)
- Energy: 0.6 tCO2e (2%)
- Capital goods: 0.4 tCO2e (2%)
- Other categories (travel, waste): < 1%

This structure confirms the decisive weight of outsourced services in PERDELLE's business model: maintenance, cutting, logistics, professional services, etc.

Direct emissions (linked to materials and components) represent approximately one third of the total, while indirect emissions (purchases, freight, energy, site operations) reach nearly 25 kgCO2e per Perdelle device, i.e. twice the emissions intrinsic to the product itself.

4.2 Analytical reading by product

Model	Carbon intensity (kgCO2e / unit) excluding indirect overhead	Dominant material	Specific features
Néo device	12.3	Steel	All-steel structure, high density, no wood.
Swan device	13.8	Steel	Equipped with plastic and aluminum components.
Taya device	6.5	Steel + wood	Mixed structure, lighter, use of wood and aluminum.

The Perdelle Taya device shows a direct footprint half that of the other models, thanks to:

- lower metal mass,
- a share of bio-based materials (beech wood),

This performance demonstrates the relevance of eco-optimized design and the feasibility of significantly reducing unit emissions through design choices.

4.3 Identified reduction levers

Service purchases (56% of total)

- Structure a responsible purchasing plan: incorporate low-carbon criteria into calls for tender, prioritize local service providers, and measure their carbon footprint.

- Strengthen the traceability of outsourced services, which are currently characterized by high uncertainty (±50%) due to the lack of direct data from suppliers.
- Consider environmental clauses in subcontracting and maintenance agreements.

Material inputs (35% of total)

- Decarbonize metallic materials (steel, aluminum): use recycled channels, low-carbon steel, or certified suppliers.
- Lighten designs: continue the Taya approach (wood + lighter steel).
- Explore reuse or circular economy options for certain components.

Freight and logistics (4%)

- Optimize routes, consolidate shipments, and assess the relevance of low-carbon transport (biogas, electric, rail).
- Favor transport providers certified as low-carbon.

Energy and capital goods (4%)

- Monitor consumption and improve the energy efficiency of premises.
- Integrate carbon performance into future investment choices.

4.4 Qualitative comments

The predominance of indirect emissions reflects a highly outsourced industrial model, in which carbon control depends heavily on the data and practices of service providers.

The analysis highlights the good performance of the Besançon site, whose energy consumption remains moderate. This appears to be mainly due to the fact that the premises are relatively small and partly shared with other companies.

Finally, the diversity of products (Swan, Néo, Taya devices) shows that low-carbon design is a genuine strategic lever: choices of materials, mass and assembly directly influence the unit footprint.

However, the precision of supplier data remains a major issue: the monetary emission factors used for services are averaged and therefore carry uncertainty. A collaborative approach with subcontractors would make it possible to improve the reliability of these results in future assessments.

5. Action plan and outlook

5.1 Current situation

To date, no action plan has been formalized following this first Carbon Footprint®.

However, PERDELLE considers this assessment to be an essential first step in understanding its climate impacts and in progressively building a low-carbon approach.

This first exercise has made it possible to:

- quantify the overall carbon footprint of the business activity for the first time,
- identify the most contributory categories (in particular service purchases and metallic materials),
- and provide a reference baseline for any future reduction initiative.

5.2 General outlook

Although no specific action is planned in the short term, management intends to use the lessons learned from this Carbon Footprint® to guide future decisions, particularly along three lines of reflection:

- Increase production of low-impact models, such as the Perdelle Taya device, whose mixed steel/wood design has a significantly lower footprint.
- Continue discussions with suppliers and subcontractors in order to gradually obtain more precise carbon data and reduce the uncertainty associated with service purchase categories.
- Highlight the results obtained in the company's communication as evidence of an initial commitment toward better control of its environmental impact.

5.3 A first structuring step

This Carbon Footprint® is, above all, a foundational step.

It enables PERDELLE to:

- have a reliable snapshot of its footprint for fiscal year 2024-2025,
- embed carbon measurement culture within its governance,
- and lay the groundwork for a future action plan when a broader environmental strategy has been defined.

5.4 Conclusion

Even without a formalized plan, this first Carbon Footprint® marks an important turning point for PERDELLE.

It constitutes the starting point of a long-term approach aimed at:

- displaying the carbon weight of its products,
- better understanding its impacts,
- structuring dialogue with its partners,
- and, ultimately, preparing the definition of credible reduction targets and actions.

This report therefore does not conclude a climate policy - it inaugurates one.

Appendix: Main emission factors

Category	Item	Emission	Unit	Source
Energy	Diesel	2.66	kgCO2e/L	Base
Energy	Electricity (France mix)	0.06	kgCO2e/kWh	Base
Energy	Heating (natural gas)	24.5	kgCO2e/m3	Base
Capital goods	Building	403	kgCO2e (50	Base
Capital goods	Machining equipment	4.2	kgCO2e/kg	Base
Material inputs	Steel	2.21	kgCO2e/kg	Base
Material inputs	Aluminum	7.8	kgCO2e/kg	Base
Material inputs	Plastic (PP, PE, ABS)	2.38	kgCO2e/kg	Base
Material inputs	Rubber	5.44	kgCO2e/kg	Base
Material inputs	Cardboard / Paper	0.39	kgCO2e/kg	Base
Material inputs	Wood (dry beech)	0.0367	kgCO2e/kg	Base
Material inputs	PU / PE foam	4.87	kgCO2e/kg	Base
Material inputs	Steel + plastic composites	2.3	kgCO2e/kg	Base
Service purchases	Multi-technical maintenance	215	kgCO2e/kEUR	Base
Service purchases	Warehousing and logistics	147	kgCO2e/kEUR	Base
Service purchases	Other personal services	157	kgCO2e/kEUR	Base
Service purchases	Transport / vehicle rental	319	kgCO2e/kEUR	Base
Service purchases	Legal and accounting	67	kgCO2e/kEUR	Base
Service purchases	Machine repair	196	kgCO2e/kEUR	Base
Service purchases	Insurance / financial services	73	kgCO2e/kEUR	Base
Service purchases	Post / mail	112	kgCO2e/kEUR	Base
Service purchases	Telecommunications	136	kgCO2e/kEUR	Base
Service purchases	Catering / accommodation	250	kgCO2e/kEUR	Base
Service purchases	Trade fairs and exhibitions	110	kgCO2e/kEUR	Base
Service purchases	Advertising / market research	113	kgCO2e/kEUR	Base
Freight / transport	Perdelle sales (90m3	0.03	kgCO2e/m3.k	Base
Freight / transport	Inbound road freight	0.03	kgCO2e/m3.k	Base
End of life	Rigid plastic (recycling)	41	kgCO2e/tonn	Base
End of life	Aluminum (average end of	562	kgCO2e/tonn	Base
End of life	Steel (excluding recycling)	8	kgCO2e/tonn	Base
End of life	Rubber (non-hazardous	23	kgCO2e/tonn	Base