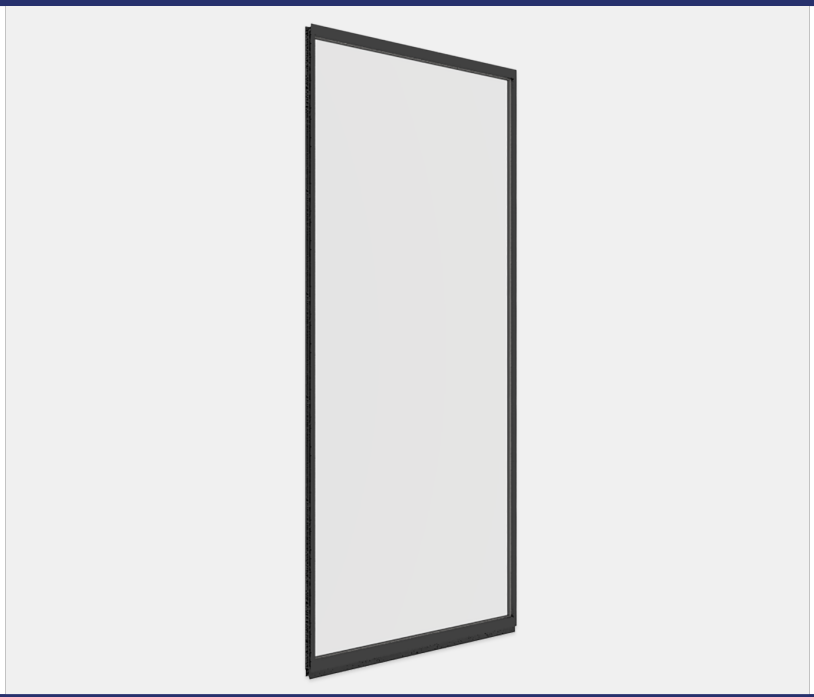
ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH ISO 14025 AND ISO 21930:2017

SmartEPD-2025-051-0225-01

Inspire Glass Wall (Savannah)



DIRTT

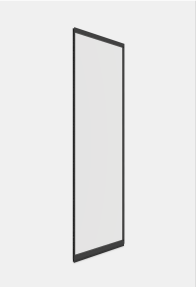
SMART EPD
CERTIFIED
ENVIRONMENTAL PRODUCT DECLARATION

Date of Issue: Jan 07, 2025

Expiration: Jan 07, 2030

Last updated: Jan 07, 2025

General Information



DIRTT

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Product Name:	Inspire Glass Wall (Savannah)
Functional Unit:	1 m2 of a demountable interior wall system, meeting the performance standards of the International Building Code
Declaration Number:	SmartEPD-2025-051-0225-01
Date of Issue:	January 07, 2025
Expiration:	January 07, 2030
Last updated:	January 07, 2025
EPD Scope:	Cradle to gate with other options A1, A2, A3, A4, A5, C1, C2, C3, C4, D
Market(s) of Applicability:	North America

Organization Information

DIRTT is a leader in industrialized construction. DIRTT's system of physical products and digital tools empowers organizations, together with construction and design leaders, to build high-performing, adaptable, interior environments. Operating in the workplace, healthcare, education, and public sector markets, DIRTT's system provides total design freedom, and greater certainty in cost, schedule, and outcomes. DIRTT's interior construction solutions are designed to be highly flexible and adaptable, enabling organizations to easily reconfigure their spaces as their needs evolve.

Further information can be found at: https://www.dirtt.com/

Limitations, Liability, and Ownership

Environmental declarations from different programs (ISO 14025) may not be comparable. Comparison of the environmental performance of products using EPD information shall be based on the product's use and impacts at the building level, and therefore EPDs may not be used for comparability purposes when not considering the whole building life cycle. EPD comparability is only possible when all stages of a life cycle have been considered. However, variations and deviations are possible. Example of variations: Different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared. The EPD owner has sole ownership, liability, and responsibility for the EPD.

Reference Standards

Standard(s):	ISO 14025 and ISO 21930:2017
Core PCR:	Smart EPD® Part A Product Category Rules for Building and Construction Products and Services v1.01 v.1.01 Date of issue: January 15, 2024 Valid until: January 15, 2029

Sub-category PCR review panel:	Contact Smart EPD for more information.
General Program Instructions:	Smart EPD General Program Instructions v.1.0, November 2022

Verification Information

LCA Author/Creator:	Juan David Villegas | juan@parqhq.com
EPD Program Operator:	Smart EPD | info@smartepd.com | www.smartepd.com 585 Grove St., Ste. 145 PMB 966, Herndon, VA 20170, USA
Verification:	Independent critical review of the LCA and data, according to ISO 14044 and ISO 14071: External Ranjani Theregowda | Smart EPD LLC | ranjani.theregowda@smartepd.com Independent external verification of EPD, according to ISO 14025 and reference PCR(s): External Ranjani Theregowda | Smart EPD LLC | ranjani.theregowda@smartepd.com

Product Information

Functional Unit:	1 m2 of a demountable interior wall system, meeting the performance standards of the International Building Code
Mass:	18.7 kg
Product Specificity:	✗ Product Average ✓ Product Specific

Product Description

Inspire™ Glass Walls feature aluminum frames and glass panels, offering a sleek, timeless design. With low-profile ceiling connections and precision-engineered components, it integrates seamlessly with building conditions. Its modular design ensures adaptability for future needs.

Further information can be found at: https://www.dirtt.com/products/inspire/

Product Specifications

Product Classification Codes:	EC3 - Furnishings -> DemountablePartitions

Material Composition

Material/Component Category	Origin	% Mass
Aluminum		19.76
Glass		71.06
Hardware		0.67
Insulation		6.02
PVC		2.49

Packaging Material	Origin	kg Mass
Wood		0.54
Steel		0.09
Ldpe		0.15
Aluminum		0.08

Biogenic Carbon Content	kg C per m2
Biogenic carbon content in product	0.52
Biogenic carbon content in accompanying packaging	0.26

Hazardous Materials
No regulated hazardous or dangerous substances are included in this product.

EPD Data Specificity

Primary Data Year: July 2023 to June 2024

Manufacturing Specificity:

- ✗ Industry Average
- ✗ Manufacturer Average
- ✗ Facility Specific

Averaging:

Averaging was not conducted for this EPD

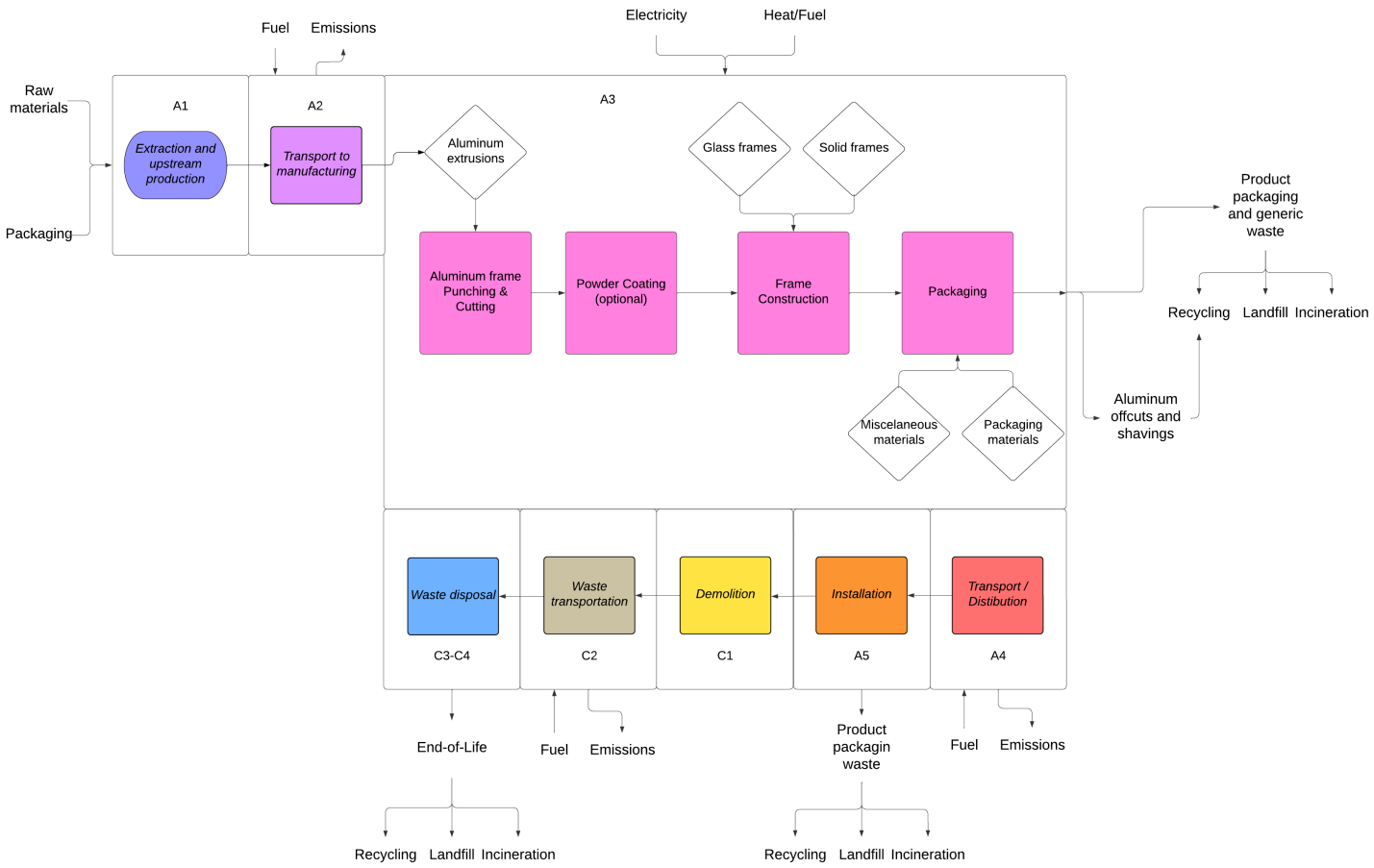
System Boundary

Production	A1	Raw material supply	✓
	A2	Transport	✓
	A3	Manufacturing	✓
Construction	A4	Transport to site	✓
	A5	Assembly / Install	✓
Use	B1	Use	ND
	B2	Maintenance	ND
	B3	Repair	ND
	B4	Replacement	ND
	B5	Refurbishment	ND
	B6	Operational Energy Use	ND
	B7	Operational Water Use	ND
End of Life	C1	Deconstruction	✓
	C2	Transport	✓
	C3	Waste Processing	✓
	C4	Disposal	✓
Benefits & Loads Beyond System Boundary	D	Recycling, Reuse Recovery Potential	✓

Plants

Dirtt-Savannah
Savannah, Georgia, USA

Product Flow Diagram



Software and Database

LCA Software:	SimaPro v. 9.5
LCI Foreground Database(s):	Ecoinvent v. 3.9.1
LCI Background Database(s):	Ecoinvent v. 3.9.1

Data Quality

The quality of inventory data is evaluated based on several criteria, including precision, completeness, consistency, and representativeness.

Precision and completeness:

- Precision: The inventory data used in this study was either directly measured, calculated, or estimated based on primary data sources, ensuring high precision. Background data from ecoinvent v3 database also has documented precision to the extent available.
-

Completeness: The product system's mass balance and inventory completeness were thoroughly checked. Some exclusions were made in line with the PCR requirements, such as personnel impacts, R&D activities, business travel, secondary packaging, point of sale infrastructure, and the coating applicator. However, no data was intentionally omitted.

Consistency and reproducibility:

- Consistency: Primary data was collected with a similar level of detail, while background data primarily came from the ecoinvent database, with other databases used only if necessary or more representative. The modeling approach and other methodological choices were applied consistently throughout the model.
- Reproducibility: This study ensures reproducibility by providing comprehensive disclosure of input-output data, dataset choices, and modeling approaches. A knowledgeable third party should be able to approximate the results using the same data and modeling methods.

Representativeness:

- Temporal: Primary data was collected for the 12-month period starting June 2023 and ending in May 2024 to ensure the representativeness of post-consumer content. Secondary data from the ecoinvent v3 database is typically representative of recent years. to ensure the representativeness of post-consumer content. Secondary data from the ecoinvent v3 database is typically representative of recent years.
- Geographical: Primary data represent DIRTT's production facility in Savanah, GA, US. Where applicable, differences in electric grid mix were considered using appropriate secondary data. The use of country-specific data ensures high geographical representativeness, and proxy data were only used when country-specific data were unavailable.
- Technological: Both primary and secondary data were tailored to the specific technologies studied, ensuring high technological representativeness.

Life Cycle Module Descriptions

Primary data was collected for a 12-month period from July 2023 to June 2024 to ensure technical, geographical, and temporal representativeness. The manufacturing process involves punching and cutting aluminum frames, applying optional powder coating, and incorporating glass tiles into the frames. Solid tiles (e.g., Chromacoat Plus paint, veneer, fabric, or back-painted glass tiles) are shipped separately from their aluminum frames and installed onsite. Production requires grid electricity along with energy from propane and natural gas combustion. After manufacturing, the frames are packaged and distributed to various installation sites. Non-hazardous waste, consisting mainly of packaging material, is sent for disposal or recycling.

LCA Discussion

Allocation Procedure

Allocation of co-products was avoided, to the extent it was possible, based on the guidance given in ISO 14044:2006, 4.3., in ISO 21930:2017 and section 4.5.1 of Smart EPD™ Part A Product Category Rules for Building and Construction Products and Services Standard 1000, version 1.01. Energy use at the facility level was allocated by mass of interior wall systems produced. The process does not consume process water or generate wastewater or air emissions. Solid waste was estimated using packaging masses and material losses and allocated following the polluter pays principle as indicated in section 4.5.2 of the PCR.

Cut-off Procedure

The system boundary was defined based on relevance to the goal of the study. For the raw material (A1) and process related inputs (A3), all available energy and material flow data have been included in the model. Cut-off criteria of 1% was only applied for packaging materials and non-hazardous waste streams. In cases where no matching life cycle inventories are available to represent a flow, proxy data has been applied based on conservative assumptions regarding environmental impacts.

Renewable Electricity

Energy Attribute Certificates (EACs) such as Renewable Energy Certificates (RECs) or Power Purchase Agreements (PPAs) are included in the baseline reported results:	✕ No

Results

Environmental Impact Assessment Results

TRACI 2.1

per 1 m2 of product of a demountable interior wall system, meeting the performance standards of the International Building Code.

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

Impact Category	Method	Unit	A1A2A3	A4	A5	C1	C2	C3	C4	D
GWP-total	TRACI 2.1	kg CO2-eq	51	2.29	0.121	ND	0.501	ND	8.26	-15.4
ODP	TRACI 2.1	kg CFC-11 eq	5.45e-7	5.59e-8	8.47e-10	ND	1.23e-8	ND	6.1e-9	-2.9e-7
AP	TRACI 2.1	kg SO2 eq	0.191	0.00483	0.000143	ND	0.00106	ND	0.00244	-0.0708
EP	TRACI 2.1	kg N eq	0.104	0.00173	0.00604	ND	0.000379	ND	0.114	-0.0551
SFP	TRACI 2.1	kg O3 eq	3.13	0.0899	0.00276	ND	0.0197	ND	0.0397	-0.866

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

GWP = Global Warming Potential, 100 years (may also be denoted as GWP-total, GWP-fossil (fossil fuels), GWP-biogenic (biogenic sources), GWP-luluc (land use and land use change)), ODP = Ozone Depletion Potential, AP = Acidification Potential, EP = Eutrophication Potential, SFP = Smog Formation Potential, POCP = Photochemical oxidant creation potential, ADP-Fossil = Abiotic depletion potential for fossil resources, ADP-Minerals&Metals = Abiotic depletion potential for non-fossil resources, WDP = Water deprivation potential, PM = Particular Matter Emissions, IRP = Ionizing radiation, human health, ETP-fw = Eco-toxicity (freshwater), HTP-c = Human toxicity (cancer), HTP-nc = Human toxicity (non-cancer), SQP = Soil quality index.

Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase when product performance and specifications have been established and serve as a functional unit for comparison. Environmental impact results shall be converted to a functional unit basis before any comparison is attempted. Any comparison of EPDs shall be subject to the requirements of ISO 21930 or EN 15804. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries, are based on different product category rules or are missing relevant environmental impacts. Such comparison can be inaccurate, and could lead to erroneous selection of materials or products which are higher-impact, at least in some impact categories.

Resource Use Indicators

per 1 m2 of product of a demountable interior wall system, meeting the performance standards of the International Building Code.

Indicator	Unit	A1A2A3	A4	A5	C1	C2	C3	C4	D
ADPF	MJ	421	33.9	0.577	ND	7.43	ND	4.77	-153
RPRE	MJ	62.8	0.506	0.0157	ND	0.111	ND	0.226	-26.8
RPRM	MJ	ND	ND	ND	ND	ND	ND	ND	ND
NRPRE	MJ	504	34.6	0.594	ND	7.59	ND	5.05	-179
NRPRM	MJ	0.0654	0.00146	0.0000272	ND	0.00032	ND	0.000377	-0.049
SM	kg	3.52	ND	ND	ND	ND	ND	ND	-2.09
RSF	MJ	ND	ND	ND	ND	ND	ND	ND	ND
NRSF	MJ	ND	ND	ND	ND	ND	ND	ND	ND
RE	MJ	ND	ND	ND	ND	ND	ND	ND	ND
FW	m3	0.249	0.00469	0.000285	ND	0.00103	ND	0.00452	-0.0826

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

RPRE or PERE = Renewable primary resources used as energy carrier (fuel), RPRM or PERM = Renewable primary resources with energy content used as material, RPRT or PERT = Total use of renewable primary resources with energy content, NRPRE or PENRE = Non-renewable primary resources used as an energy carrier (fuel), NRPRM or PENRM = Non-renewable primary resources with energy content used as material, NRPRT or PENRT = Total non-renewable primary resources with energy content, SM = Secondary materials, RSF = Renewable secondary fuels, NRSF = Non-renewable secondary fuels, RE = Recovered energy, ADPF = Abiotic depletion potential, FW = Use of net freshwater resources, VOCs = Volatile Organic Compounds.

Waste and Output Flow Indicators

per 1 m2 of product of a demountable interior wall system, meeting the performance standards of the International Building Code.

Indicator	Unit	A1A2A3	A4	A5	C1	C2	C3	C4	D
HLLRW	m3	ND	ND	ND	ND	ND	ND	ND	ND
ILLRW	m3	ND	ND	ND	ND	ND	ND	ND	ND
CRU	kg	ND	ND	ND	ND	ND	ND	ND	ND
MR	kg	0.374	ND	0.0131	ND	ND	ND	ND	ND
MER	kg	ND	ND	ND	ND	ND	ND	ND	ND
NHWD	kg	0.00578	ND	0.794	ND	ND	ND	15.1	ND
HWD	kg	ND	ND	ND	ND	ND	ND	ND	ND

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

HWD = Hazardous waste disposed, NHWD = Non-hazardous waste disposed, RWD = Radioactive waste disposed, HLRW = High-level radioactive waste, ILLRW = Intermediate- and low-level radioactive waste, CRU = Components for re-use, MFR or MR = Materials for recycling, MER = Materials for energy recovery, MNER = Materials for incineration, no energy recovery, EE or EEE = Recovered energy exported from the product system, EET = Exported thermal energy.

Carbon Emissions and Removals

per 1 m2 of product of a demountable interior wall system, meeting the performance standards of the International Building Code.

Indicator	Unit	A1A2A3	A5	C3	C4	D
BCRP	kg C	0.518	ND	ND	ND	ND
BCEP	kg C	ND	ND	ND	0.518	ND
BCRK	kg C	0.333	ND	ND	ND	ND
BCEK	kg C	ND	0.333	ND	ND	ND
CCE	kg C	ND	ND	ND	ND	ND

Note:

Not all abbreviated indicators listed below may be present in the results above. The inclusion of indicators varies based on PCR requirements.

Abbreviations:

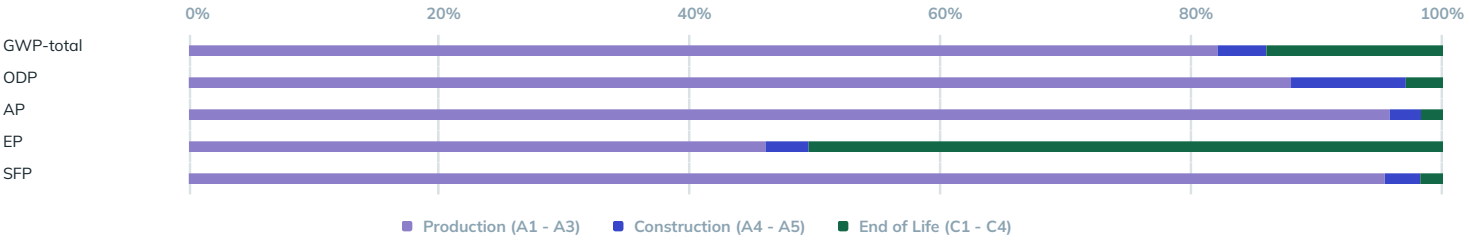
BCRP = Biogenic Carbon Removal from Product, BCEP = Biogenic Carbon Emission from Product, BCRK = Biogenic Carbon Removal from Packaging, BCEK = Biogenic Carbon Emission from Packaging, BCEW = Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes, CCE = Calcination Carbon Emissions, CCR = Carbonation Carbon Removals, CWNR = Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes, GWP-luc = Carbon Emissions from Land-use Change.

Impact Scaling Factors

Product Name and/or Product Attribute	Product Specific Functional/Declared Unit Multiplier

Interpretation

The product stage (A1-A3) shows the highest environmental impact, primarily due to raw material manufacturing and manufacturing energy use. For products with high manufacturing energy impacts, switching to renewable energy sources is recommended. Since raw materials significantly impact the environmental footprint, DIRTT should consider using alternative materials with lower environmental impacts. They should also seek suppliers who use sustainable manufacturing techniques and renewable energy. These changes would improve the overall sustainability of DIRTT's products.



Additional Environmental Information

The end-of-life (EOL) stage of the product was modeled in four phases. C1 (Deconstruction/Demolition) accounts for energy use and emissions from removing the Interior Wall Systems at the end of their useful life—these impacts are allocated entirely to building deconstruction, with no burden on the product. C2 (Transport) encompasses the transportation of waste materials from the deconstruction site to disposal/recycling facilities, including associated fuel consumption and emissions. C3 (Waste Processing) is not applicable since no intermediate processing is needed before waste reaches the management facility. C4 (Disposal) addresses final waste management scenarios. Since DIRTT has no control over their products' end-of-life handling, PCR scenarios determined the recycling/reuse versus disposal rates for each waste stream (aluminum frames, tempered glass, PVC).

References

- ISO 14025, “Environmental labels and declarations — Type III environmental declarations — Principles and procedures”, ISO14025:2006
- ISO 21930, Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services. ISO21930:2017
- Smart EPD™ Part A Product Category Rules for Building and Construction Products and Services Standard 1000, version 1.01, Smart EPD™ :2024
- ISO 14044, “Environmental management - Life cycle assessment - Requirements and guidelines”, ISO14044:2006.
- Ecoinvent v3.9.1, December 2022. The ecoinvent database: Overview and methodology, Data quality guideline for the ecoinvent database version 3, www.ecoinvent.org