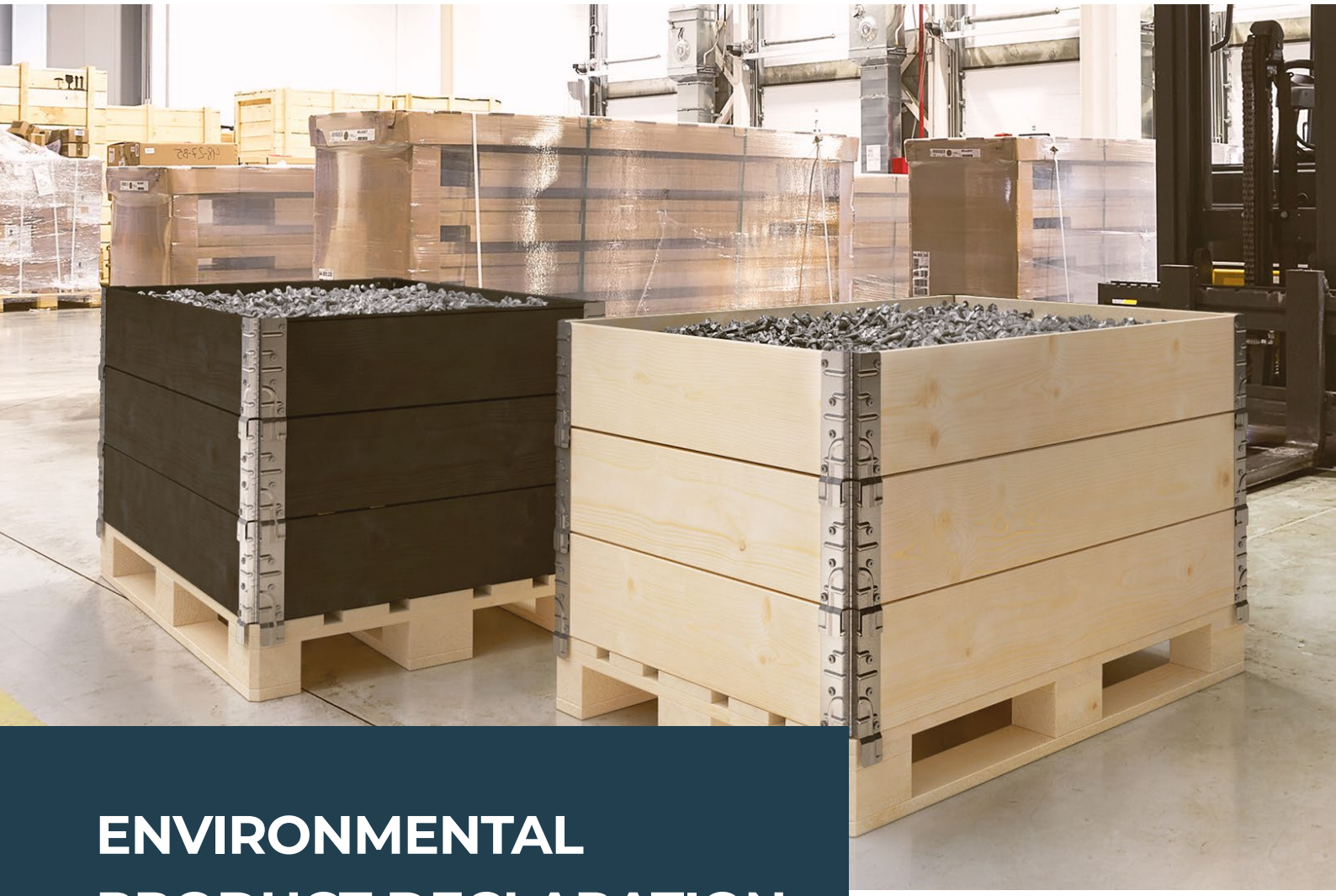
KRONUS
CARRYING YOUR BUSINESS



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH ISO 14025:2006 FOR: WOODEN PACKAGING FROM KRONUS SIA

EPD®

Programme: The International EPD® System www.environdec.com	Programme operator: EPD International AB	EPD registration number: S-P-08950	Publication date: 2023-04-05	Valid until: 2028-04-04

PROGRAMME INFORMATION

PROGRAMME:

The International EPD ® System

EPD International AB
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SE-100 31 Stockholm
Sweden

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ACCOUNTABILITIES FOR PCR, LCA AND INDEPENDENT, THIRD-PARTY VERIFICATION

Product Category Rules (PCR)	PCR: PCR 2019:13 Packaging (Version 1.1) UN CPC code 88314 Wooden containers manufacturing services PCR review was conducted by: IVL Swedish Environmental Research Institute Secretariat of the International EPD® System
Life Cycle Assessment (LCA)	LCA accountability: Dr. Ing. Kaspars Zudrags, SIA BM Certification
Third-party verification	Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ▪ EPD verification by individual verifier ▪ Third-party verifier: Prof. Vladimír Kočí, PhD, LCA Studio ▪ Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third-party verifier	☐ Yes ■ No

COMPANY INFORMATION

OWNER OF THE EPD

SIA KRONUS, Daugulu street 19, Ulbroka, Stopinu pag., Ropazu nov., LV-2130 Latvia, info@kronus.eu

DESCRIPTION OF THE ORGANISATION

SIA KRONUS is an emerging global leader in the manufacture, sale, and development of wooden packaging, related services, DIY garden products, timber and steel products. Our ultimate goal is to create products and services, which are valuable for our customers all over the world.

We produce wooden packaging of all types for every industry. Manufacture, delivery, quality assurance and guaranteed carrying out of orders within the required time frame.

SIA KRONUS is the largest manufacturer of wooden pallet collars in the world – we produce more than 9 million pallet collars annually. This solution solves most of the tasks associated with cargo storage and transportation.

COMPANY INFORMATION

PRODUCT-RELATED OR MANAGEMENT SYSTEM-RELATED CERTIFICATIONS

Throughout the whole production process, from the purchase of raw materials to the delivery of the finished goods to end-users, company ensure the consistent quality of our products.

SIA KRONUS manufacturing processes comply with international standards - ISO 9001: 2015, ISO 14001:2015, ISO 50001:2018, ISO 28001:2007. As well as company have implemented and maintains the Chain of Custody management system in accordance with the requirements of the standards PEFC ST 2002:2020 and FSC–STD-40-004 V3-1. The company's policy is to use PEFC (PEFC/12-31-010) and FSC® (FSC-153405) certified raw materials as much as possible. The company, for the development and sale of certified and controlled products, will use only such properties, the origin of which be clearly known and proven.

The obtained certificates confirm the compliance of the materials, the finished product as well as the production itself with international standards. This is an important point to export the product worldwide and create packaging solutions that suit everyone. It is important to us that we can provide the highest quality packaging, and this is confirmed by the certificates we have obtained.

NAME AND LOCATION OF PRODUCTION SITE

SIA KRONUS, Daugulu street 19, Ulbroka, Stopinu pag., Ropazu nov., LV-2130 Latvia

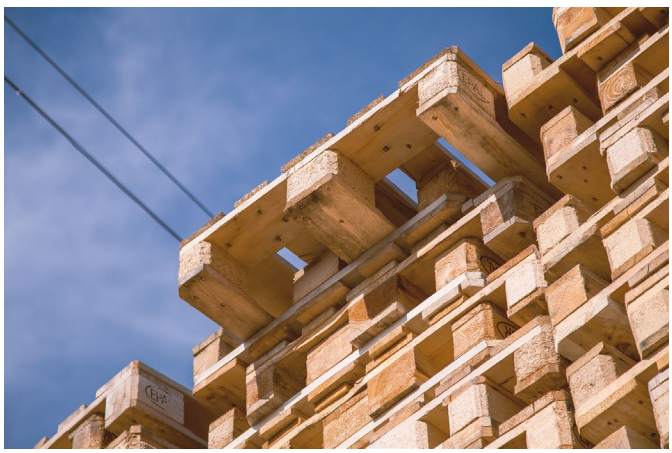
PRODUCT INFORMATION

Product name	Wooden packaging
Product identification	Wooden packaging that consists of wooden pallet, pallet collar and lid
Product description	Wooden packaging consisting of a pallet collar, a pallet, and a lid can withstand high loads due to lateral and vertical pressure. This structure ensures the protection as well as security of the cargo. Environmentally friendly base for transporting goods

UN CPC code	88314 Wooden containers manufacturing services
NACE code	6.24 Manufacture of wooden containers
Geographical scope	Europe

LCA INFORMATION

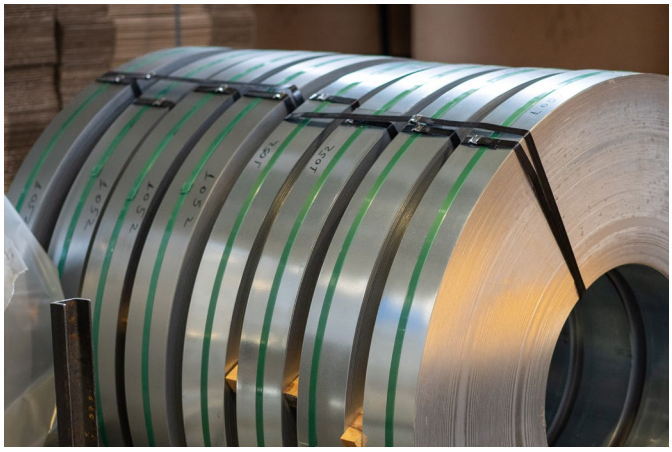
Functional unit / declared unit	1 (one) packaging product unit
Base material of packaging product	Wood
External dimensions of the packaging product	▪ Pallet – 1200mm by 800mm by 144 mm ▪ Collar – 1200mm by 800 mm by 975 mm (5x195 mm) ▪ Lid – 1200 mm by 800 mm by 8 mm
Internal volume of the packaging product	0.85 m^3
Weight of packaging product	▪ Pallet: 24 kg ▪ Collars: 40.5 kg ▪ Lids: 4.65 kg ▪ Packaging total: 69.15 kg
Reference service life	Up to 20 years
Time representativeness	Data for calculation were collected by Kronus SIA and cover 12 months of year 2021
Database(s) and LCA software used	One Click LCA, Ecoinvent 3.6.
Description of system boundaries	Cradle-Grave
Manufacturing and packaging	Upon delivery, all material is examined for quality compliance using a variety of standards, including dimensions, humidity level, tolerances, etc. Raw material is sorted according to internal sorting criteria and measures the external dimensions. During the production process all materials are dried to the moisture content 22%. Raw material is processed according to product specifications – if needed, it is calibrated and/ or plained and sawed in needed dimensions.
Cut-of-Rules	All known inputs and outputs are included in the study. The ancillary materials have been cut-off due to insufficient and minor influence of data. No less than 95 % of all inflows (mass and energy) to the upstream and core modules shall be included. The raw material necessary for the manufacture is allocated by mass of the declared unit.



CONTENT DECLARATION

PRODUCT

Product components	kg	%	Environmental / hazardous properties
Wood	67.42	97.5	Renewable
Metal	1.65	2.4	
Aluminium	0.02	> 0.1	
Paint	0.06	> 0.1	
TOTAL	69.15		



DISTRIBUTION PACKAGING

Packed on wooden pallet and secured with plastic tape. If necessary, wrapped with a stretch film.

Wooden packaging contains biogenic carbon which refers to atmospheric carbon stored in a growing tree by photosynthesis. The kg of biogenic carbon CO2 is calculated in upstream stage as a negative value to the global warming potential (GWP) and as a positive value (the same amount) in the downstream stage. 1 kg of wood contains 0.5 kg of carbon, which is equal to around 3.67 kg of CO2 which is removed from the atmosphere.

The wooden packaging can be used for recycling or incineration for energy recovery.

RESULTS OF THE ENVIRONMENTAL PERFORMANCE INDICATORS

IMPACT CATEGORY INDICATORS

Parameter		Unit	Upstream	Core	Downstream	Total
Global warming potential (GWP)	Fossil	kg CO_2 eq.	2.02E+01	3.92E+00	5.67E-01	2.47E+01
	Biogenic	kg CO_2 eq.	-5.62E+01	2.16E-01	5.63E+01	3.20E-01
	Land use and land transformation	kg CO_2 eq.	9.26E-02	3.00E-03	7.13E-04	9.60E-02
	TOTAL	kg CO_2 eq.	-3.59E+01	4.14E+00	4.84E+01	1.66E+01
Ozone layer depletion (ODP)		kg CFC 11 eq.	2.39E-06	8.34E-07	2.50E-07	3.47E-06
Acidification potential (AP)		mol H^+ eq.	1.34E-01	2.06E-02	6.43E-03	1.61E-01
Eutrophication potential (EP)	Aquatic freshwater	kg P eq.	1.54E-03	5.48E-05	4.36E-05	1.64E-03
	Aquatic marine	kg N eq.	3.16E-02	4.64E-03	1.47E-03	3.77E-02
	Aquatic terrestrial	mol N eq.	3.96E-01	5.13E-02	1.64E-02	4.64E-01
Photochemical oxidant creation potential (POCP)		kg NMVOC eq.	1.22E-01	1.52E-02	4.75E-03	1.42E-01
Abiotic depletion potential (ADP)	Metals and minerals	kg Sb eq.	3.71E-04	6.02E-05	1.79E-05	4.50E-04
	Fossil resources	MJ, net calorific value	3.02E+02	6.39E+01	2.21E+01	3.88E+02
Water deprivation potential (WDP)		m^3 world eq. deprived	1.21E+01	3.53E-01	1.38E-01	1.26E+01

RESULTS OF THE ENVIRONMENTAL PERFORMANCE INDICATORS

RESOURCE USE INDICATORS

Parameter		Unit	Upstream	Core	Downstream	Total
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	5.55E+02	1.28E+01	2.68E+00	5.71E+02
	Used as raw materials	MJ, net calorific value	1.22E+03	1.56E-01	2.09E-02	1.22E+03
	TOTAL	MJ, net calorific value	1.78E+03	1.30E+01	2.70E+00	1.79E+03
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	3.02E+02	6.25E+01	1.86E+01	3.83E+02
	Used as raw materials	MJ, net calorific value	0.00E+00	1.44E+00	3.53E+00	4.97E+00
	TOTAL	MJ, net calorific value	3.02E+02	6.39E+01	2.21E+01	3.88E+02
Secondary material (optional)		kg	5.40E-01	1.60E-03	2.00E-04	5.41E-01
Renewable secondary fuels (optional)		MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-renewable secondary fuels (optional)		MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water (optional)		m^3	1.28E-01	1.15E-02	4.41E-03	1.44E-01

RESULTS OF THE ENVIRONMENTAL PERFORMANCE INDICATORS

WASTE INDICATORS (OPTIONAL)

Parameter	Unit	Upstream	Core	Downstream	Total
Hazardous waste disposed	kg	1.67E+00	6.74E-02	1.27E-02	1.75E+00
Non-hazardous waste disposed	kg	3.92E+01	3.66E+00	7.61E-01	4.36E+01
Radioactive waste disposed	kg	1.15E-03	3.63E-04	9.91E-05	1.61E-03

OUTPUT FLOW INDICATORS (OPTIONAL)

Parameter	Unit	Upstream	Core	Downstream	Total
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	2.05E-01	2.05E-01
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ per energy carrier	0.00E+00	0.00E+00	5.73E+01	5.73E+01
Exported energy, thermal	MJ per energy carrier	0.00E+00	0.00E+00	3.23E+02	3.23E+02

RESULTS OF THE ENVIRONMENTAL PERFORMANCE INDICATORS

OTHER ENVIRONMENTAL PERFORMANCE INDICATORS
IMPACT CATEGORY INDICATORS 1M³ OF WOODEN COLLARS

Parameter		Unit	Upstream	Core	Downstream	Total
Global warming potential (GWP)	Fossil	kg CO_2 eq.	1.12E+02	5.85E+01	7.29E+00	1.78E+02
	Biogenic	kg CO_2 eq.	-7.51E+02	3.20E+00	7.52E+02	4.20E+00
	Land use and land transformation	kg CO_2 eq.	1.39E+00	4.33E-02	9.69E-03	1.44E+00
	TOTAL	kg CO_2 eq.	-6.37E+02	6.18E+01	7.59E+02	1.84E+02
Ozone layer depletion (ODP)		kg CFC 11 eq.	1.06E-05	1.26E-05	1.05E-06	2.42E-05
Acidification potential (AP)		mol H^+ eq.	7.07E-01	3.06E-01	3.66E-02	1.05E+00
Eutrophication potential (EP)	Aquatic freshwater	kg P eq.	8.31E-03	8.12E-04	4.64E-04	9.59E-03
	Aquatic marine	kg N eq.	1.82E-01	6.86E-02	7.09E-03	2.58E-01
	Aquatic terrestrial	mol N eq.	1.98E+00	7.63E-01	8.24E-02	2.82E+00
Photochemical oxidant creation potential (POCP)		kg NMVOC eq.	6.75E-01	2.30E-01	2.19E-02	9.27E-01
Abiotic depletion potential (ADP)	Metals and minerals	kg Sb eq.	1.79E-03	9.40E-04	3.41E-05	2.77E-03
	Fossil resources	MJ, net calorific value	1.42E+03	9.57E+02	1.28E+02	2.50E+03
Water deprivation potential (WDP)		m^3 world eq. deprived	2.42E+01	5.23E+00	1.10E+00	3.06E+01

RESULTS OF THE ENVIRONMENTAL PERFORMANCE INDICATORS

RESOURCE USE INDICATORS

Parameter		Unit	Upstream	Core	Downstream	Total
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	3.98E+03	1.86E+02	1.48E+01	4.18E+03
	Used as raw materials	MJ, net calorific value	1.05E+04	2.38E+00	1.69E-02	1.05E+04
	TOTAL	MJ, net calorific value	1.45E+04	1.88E+02	1.49E+01	1.47E+04
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	1.42E+03	9.35E+02	8.84E+01	2.44E+03
	Used as raw materials	MJ, net calorific value	0.00E+00	2.20E+01	3.98E+01	6.18E+01
	TOTAL	MJ, net calorific value	1.42E+03	9.57E+02	1.28E+02	2.50E+03
Secondary material (optional)		kg	4.54E+00	2.44E-02	0.00E+00	4.56E+00
Renewable secondary fuels (optional)		MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-renewable secondary fuels (optional)		MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water (optional)		m^3	7.97E-01	1.72E-01	2.79E-02	9.97E-01

WASTE INDICATORS (OPTIONAL)

Parameter	Unit	Upstream	Core	Downstream	Total
Hazardous waste disposed	kg	1.25E+01	1.01E+00	1.13E-04	1.35E+01
Non-hazardous waste disposed	kg	2.09E+02	5.59E+01	2.30E-03	2.65E+02
Radioactive waste disposed	kg	5.54E-03	5.54E-03	2.89E-04	1.14E-02

RESULTS OF THE ENVIRONMENTAL PERFORMANCE INDICATORS

OUTPUT FLOW INDICATORS (OPTIONAL)

Parameter	Unit	Upstream	Core	Downstream	Total
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	1.30E+01	1.30E+01
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ per energy carrier	0.00E+00	0.00E+00	7.71E+02	7.71E+02
Exported energy, thermal	MJ per energy carrier	0.00E+00	0.00E+00	4.34E+03	4.34E+03

RESULTS OF THE ENVIRONMENTAL PERFORMANCE INDICATORS

IMPACT CATEGORY INDICATORS 1M³ OF WOODEN LIDS

Parameter		Unit	Upstream	Core	Downstream	Total
Global warming potential (GWP)	Fossil	kg CO_2 eq.	5.24E+02	9.35E+01	1.71E+01	6.35E+02
	Biogenic	kg CO_2 eq.	-1.04E+03	3.20E+00	1.04E+03	3.24E+00
	Land use and land transformation	kg CO_2 eq.	2.66E+00	5.63E-02	1.51E-02	2.73E+00
	TOTAL	kg CO_2 eq.	-5.15E+02	9.68E+01	1.71E+01	-4.01E+02
Ozone layer depletion (ODP)		kg CFC 11 eq.	7.83E-05	2.04E-05	2.33E-05	1.22E-04
Acidification potential (AP)		mol H^+ eq.	4.18E+00	4.46E-01	5.18E-01	5.15E+00
Eutrophication potential (EP)	Aquatic freshwater	kg P eq.	5.02E-02	1.11E-03	1.85E-03	5.32E-02
	Aquatic marine	kg N eq.	9.44E-01	1.12E-01	1.28E-01	1.18E+00
	Aquatic terrestrial	mol N eq.	1.33E+01	1.23E+00	1.42E+00	1.60E+01
Photochemical oxidant creation potential (POCP)		kg NMVOC eq.	3.47E+00	3.70E-01	4.21E-01	4.26E+00
Abiotic depletion potential (ADP)	Metals and minerals	kg Sb eq.	1.05E-02	1.88E-03	1.91E-03	1.43E-02
	Fossil resources	MJ, net calorific value	9.03E+03	1.48E+03	1.77E+03	1.23E+04
Water deprivation potential (WDP)		m^3 world eq. deprived	5.24E+02	6.93E+00	8.57E+00	5.39E+02

RESULTS OF THE ENVIRONMENTAL PERFORMANCE INDICATORS

RESOURCE USE INDICATORS

Parameter		Unit	Upstream	Core	Downstream	Total
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	1.95E+04	1.93E+02	2.16E+02	1.99E+04
	Used as raw materials	MJ, net calorific value	1.31E+04	2.38E+00	2.44E+00	1.31E+04
	TOTAL	MJ, net calorific value	3.26E+04	1.95E+02	2.18E+02	3.30E+04
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	9.03E+03	1.46E+03	1.60E+03	1.21E+04
	Used as raw materials	MJ, net calorific value	0.00E+00	2.20E+01	1.70E+02	1.92E+02
	TOTAL	MJ, net calorific value	9.03E+03	1.48E+03	1.77E+03	1.23E+04
Secondary material (optional)		kg	3.65E-01	2.44E-02	2.44E-02	4.14E-01
Renewable secondary fuels (optional)		MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-renewable secondary fuels (optional)		MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water (optional)		m^3	2.79E+00	2.60E-01	3.25E-01	3.37E+00

WASTE INDICATORS (OPTIONAL)

Parameter	Unit	Upstream	Core	Downstream	Total
Hazardous waste disposed	kg	2.48E+01	1.55E+00	1.55E+00	2.79E+01
Non-hazardous waste disposed	kg	1.06E+03	9.27E+01	9.28E+01	1.24E+03
Radioactive waste disposed	kg	3.73E-02	9.14E-03	1.02E-02	5.66E-02

RESULTS OF THE ENVIRONMENTAL PERFORMANCE INDICATORS

OUTPUT FLOW INDICATORS (OPTIONAL)

Parameter	Unit	Upstream	Core	Downstream	Total
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	1.00E+00	1.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ per energy carrier	0.00E+00	0.00E+00	1.23E+03	1.23E+03
Exported energy, thermal	MJ per energy carrier	0.00E+00	0.00E+00	6.92E+03	6.92E+03

RESULTS OF THE ENVIRONMENTAL PERFORMANCE INDICATORS

IMPACT CATEGORY INDICATORS 1M³ OF WOODEN PALLETS

Parameter		Unit	Upstream	Core	Downstream	Total
Global warming potential (GWP)	Fossil	kg CO_2 eq.	3.37E+02	5.37E+01	7.50E+00	3.98E+02
	Biogenic	kg CO_2 eq.	-8.61E+02	3.34E+00	8.63E+02	5.46E+00
	Land use and land transformation	kg CO_2 eq.	1.18E+00	4.47E-02	1.05E-02	1.23E+00
	TOTAL	kg CO_2 eq.	-5.23E+02	5.71E+01	8.71E+02	4.05E+02
Ozone layer depletion (ODP)		kg CFC 11 eq.	3.76E-05	1.13E-05	1.03E-06	4.99E-05
Acidification potential (AP)		mol H^+ eq.	2.11E+00	2.93E-01	3.87E-02	2.44E+00
Eutrophication potential (EP)	Aquatic freshwater	kg P eq.	2.38E-02	7.92E-04	5.08E-04	2.51E-02
	Aquatic marine	kg N eq.	5.00E-01	6.36E-02	7.36E-03	5.71E-01
	Aquatic terrestrial	mol N eq.	6.09E+00	7.03E-01	8.44E-02	6.88E+00
Photochemical oxidant creation potential (POCP)		kg NMVOC eq.	1.98E+00	2.07E-01	2.30E-02	2.21E+00
Abiotic depletion potential (ADP)	Metals and minerals	kg Sb eq.	6.12E-03	7.26E-04	4.01E-05	6.89E-03
	Fossil resources	MJ, net calorific value	4.89E+03	8.84E+02	1.33E+02	5.91E+03
Water deprivation potential (WDP)		m^3 world eq. deprived	1.77E+02	5.15E+00	1.21E+00	1.84E+02

RESULTS OF THE ENVIRONMENTAL PERFORMANCE INDICATORS

RESOURCE USE INDICATORS

Parameter		Unit	Upstream	Core	Downstream	Total
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	7.95E+03	2.00E+02	1.63E+01	8.17E+03
	Used as raw materials	MJ, net calorific value	2.27E+04	2.38E+00	1.54E-02	2.27E+04
	TOTAL	MJ, net calorific value	3.06E+04	2.03E+02	1.63E+01	3.08E+04
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	4.89E+03	8.62E+02	9.72E+01	5.85E+03
	Used as raw materials	MJ, net calorific value	0.00E+00	2.20E+01	3.63E+01	5.83E+01
	TOTAL	MJ, net calorific value	4.89E+03	8.84E+02	1.33E+02	5.91E+03
Secondary material (optional)		kg	1.11E+01	2.44E-02	0.00E+00	1.11E+01
Renewable secondary fuels (optional)		MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-renewable secondary fuels (optional)		MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water (optional)		m^3	2.20E+00	1.60E-01	3.13E-02	2.39E+00

WASTE INDICATORS (OPTIONAL)

Parameter	Unit	Upstream	Core	Downstream	Total
Hazardous waste disposed	kg	3.03E+01	9.34E-01	1.04E-04	3.12E+01
Non-hazardous waste disposed	kg	6.49E+02	4.87E+01	2.11E-03	6.98E+02
Radioactive waste disposed	kg	1.80E-02	4.84E-03	2.64E-04	2.31E-02

RESULTS OF THE ENVIRONMENTAL PERFORMANCE INDICATORS

OUTPUT FLOW INDICATORS (OPTIONAL)

Parameter	Unit	Upstream	Core	Downstream	Total
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ per energy carrier	0.00E+00	0.00E+00	8.42E+02	8.42E+02
Exported energy, thermal	MJ per energy carrier	0.00E+00	0.00E+00	4.75E+03	4.75E+03

REFERENCES

- General Programme Instructions of the International EPD® System. Version 4.0.
- PCR 2019:13 Packaging (Version 1.1).
- Other references.
- ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations. Principles and procedures.
- ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.
- ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.
- Ecoinvent database v3.6 (2019) and One Click LCA database.
- Packaging LCA background report 20.03.2023.
- EN 16449:2014 Wood and wood-based products – Calculation of the biogenic carbon content of wood and conversion to carbon dioxide.