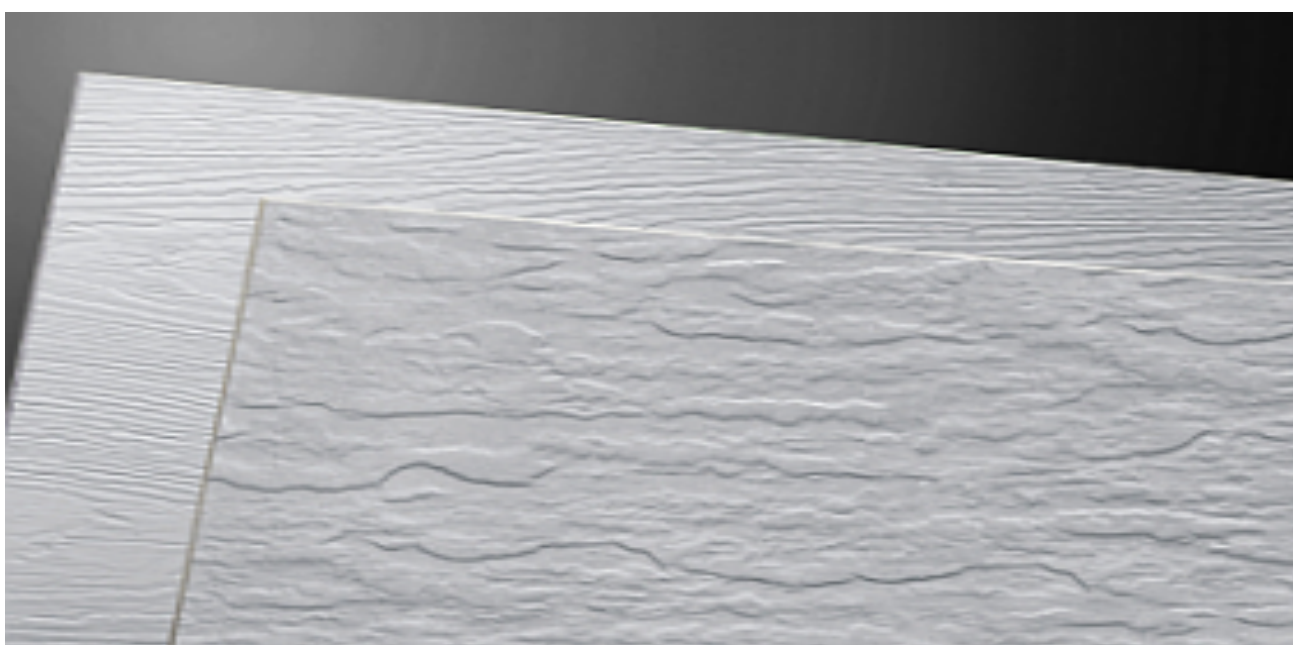


Environmental Product Declaration

In accordance with ISO 14025 and EN 15804:2012+A2:2019/AC:2021 for:

Cement-bonded particleboards CETRIS®



Programme:	Czech Environmental Information Agency (CENIA), “National programme of environmental labelling” - CZ
Programme operator:	CENIA, Czech Environmental Information Agency, Executive body of NPEZ Agency
EPD owner:	CIDEM Hranice, a.s.
Author:	LCA Studio s.r.o.
Publication date:	20.10.2025
Valid until:	20.10.2030

GENERAL INFORMATION

Followed standards and third-party verification	
Standards	This EPD is carried out according to ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021
Third-party verification	Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ Individual EPD verification without a pre-verified LCA/EPD tool Third-party verifier: prof. Ing. Silvia Vilčková, PhD., Silcert, s.r.o. Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No
LCA practitioner, commissioned by the owner of the EPD	
Name	LCA Studio s.r.o.
Address	Šárecká 1962/5, 16000 Prague 6, Czech Republic, www.lcastudio.cz
Contact	Ing. Aleš Paulu, Ph.D. (ales.paulu@lcastudio.cz) prof. Ing. Vladimír Kočí, Ph.D., MBA (vladimir.koci@lcastudio.cz) Ing. et Ing. Tatiana Trecáková, Ph.D. (tatiana.trecakova@lcastudio.cz)

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.

For further information about comparability, see EN 15804 and ISO 14025.

COMPANY INFORMATION

Owner of the EPD	
Name	CIDEM Hranice, a.s.
Address	Skalní 1088, 753 01 Hranice I – Město, Czech Republic, www.cetris.cz
Contact	Ing. Marie Libosvárová (libosvarova@cetris.cz)

Description of the EPD owner organisation:

CIDEM Hranice, a.s. – CETRIS Division is a manufacturer of board materials marketed under the CETRIS[®] trademark for cement-bonded particleboards. Construction of the production plant in the Czech Republic began in 1987, and the facility was commissioned in 1991. In 2011, the company marked 20 years since the material's market launch. In the early years, the range was limited to the CETRIS[®] BASIC board without any surface finish. Over time, the product portfolio expanded to include various services such as cutting, milling, grinding, drilling, and surface finishing. Today, CIDEM Hranice a.s. offers 17 types of cement-bonded particleboards and continue to develop new variants to meet the evolving needs of customers. CIDEM Hranice, a.s. – CETRIS Division is now the largest producer of cement-bonded particleboards in Europe, with an annual production capacity of 45 000 m³.

Location of the production site:

The production plant is located in Hranice, Czech Republic.

PRODUCT INFORMATION

This EPD is valid for the following products:	Cement-bonded particle board CETRIS – basic Cement-bonded particle board CETRIS – serviced (cut, shaped and grinded) Cement-bonded particle board CETRIS – painted Cement-bonded particle board CETRIS – serviced and painted Cement-bonded particle board CETRIS Eco – basic Cement-bonded particle board CETRIS Eco – serviced (cut, shaped and grinded)
UN CPC code	3752: Boards, blocks and similar articles of vegetable fibre, straw or wood waste agglomerated with mineral binders

CETRIS® - basic and **CETRIS® Eco - basic** are cement-bonded particleboards with a smooth, natural cement-grey surface. Both products are composed of wood chips, Portland cement, water and hydration additives.

Standard thicknesses:

CETRIS®: 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30 and 32 mm

CETRIS® Eco: 30, 32, 34, 36, 38 and 40 mm

Dimensions and processing options:

The standard board size is 3 350 × 1 250 mm. Boards can be supplied cut to customer-specified dimensions. CETRIS® - basic is also available with rounded or bevelled edges (45°), milled with a rebate (from 12 mm thickness), tongue-and-groove joints (from 16 mm thickness), or with pre-drilled holes.

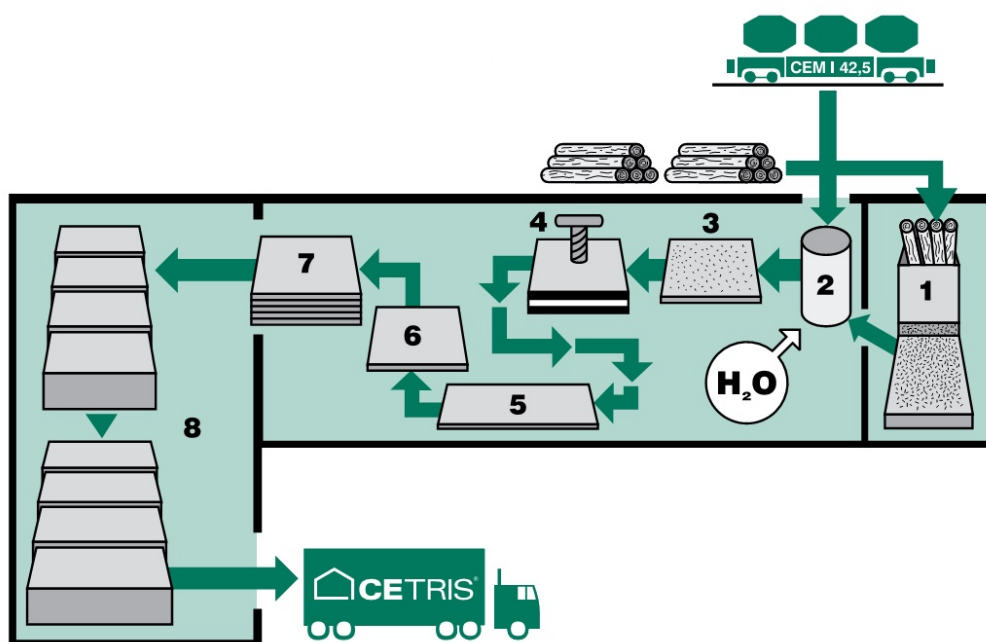
Applications and properties:

Designed primarily as structural material where moisture resistance, strength, non-combustibility, and environmental and hygienic safety are required. CETRIS® boards do not contain asbestos or formaldehyde, are resistant to insects and mould, provide sound insulation, and can be worked with standard woodworking tools.

Appearance and handling:

As cement-based products, free lime particles in Portland cement may migrate to the surface, where carbonation in contact with air can cause efflorescence, affecting the uniformity of the surface colour. The surface is not colour-uniform, and appearance-based complaints cannot be accepted.

Production flow-chart:



1 - spilling; 2 - preparations of mixture; 3 - layering of boards; 4 - pressing; 5 - drying; 6 - formatting; 7 - storage; 8 - transport.

CONTENT DECLARATION

The CIDEM Hranice, a.s cement-bonded particleboards consist of Portland cement and a mixture of wooden chips. All the constituents of cement-bonded particleboard are not classified as harmful, nor are listed on the list of Substances of Very High Concern (SVHC).

Product content	Mass [kg]	Mass [kg]	Biogenic material, kg of C per declared unit	Biogenic material, kg of C per declared unit
Product	CETRIS	CETRIS Eco	CETRIS	CETRIS Eco
Total	1450	1450	124	156
Cement	798	933	0	0
Wood chips	250	316	124	156
Limestone	221	-	0	0
Recycled materials	-	19.6	0	0
Hydration additives	35.6	36.4	0	0
Water	145	145	0	0

Packaging content	Mass [kg]	Mass [kg]	Biogenic material, kg of C per declared unit	Biogenic material, kg of C per declared unit
Product	CETRIS	CETRIS Eco	CETRIS	CETRIS Eco
Total	14.8	14.8	8.20	8.20
PE film	0.490	0.490	0	0
PP film	0.0620	0.0620	0	0
Wood palettes	14.2	14.2	8.20	8.20

1 kg biogenic carbon in the product/packaging is equivalent to the uptake of 44/12 kg of CO₂.

No post-consumer recycled material content is present in the products.

No substances included in the Candidate List of Substances of Very High Concern for authorization under the REACH regulations are present in the products either above the threshold for registration with the European Chemicals Agency or above 0.1% weight.

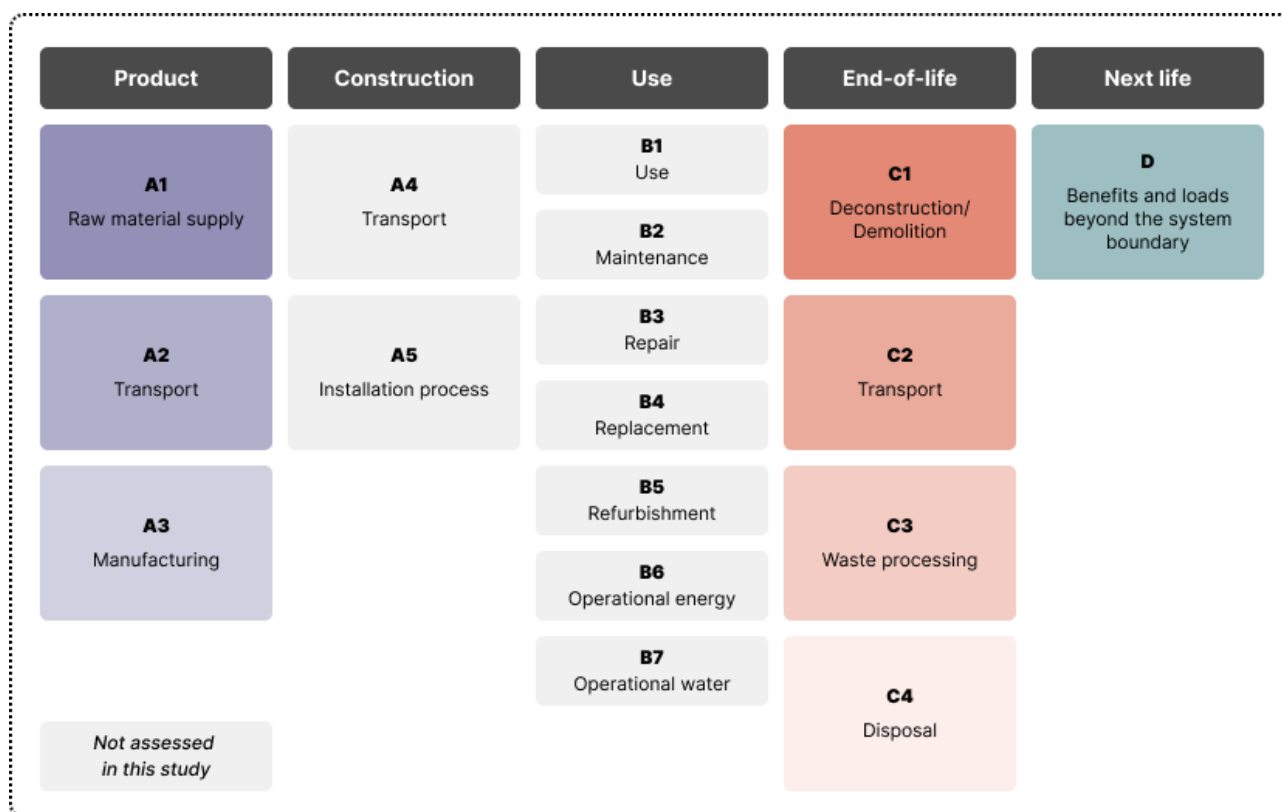
LCA INFORMATION

Functional/Declared unit	1 m ³ of cement-bonded particleboards
Reference service life:	The reference service life is the same as that of the building.
Time representativeness:	Specific manufacturer data are based on a one-year average (reference year 2024). For background data, a time scope of less than 10 years was applied.
Cut off rules:	The cut-off criterion was determined according to the EN 15804:2012+A2:2019/AC:2021 standard. In line with the requirements, more than 95% of flows were included.
Database(s) and LCA software used:	Sphera LCA for Experts software, Sphera 2025.1 and ecoinvent 3.9.1 databases
Allocations:	The general allocation rule was based on 1 m ³ of the product. No secondary materials or fuels were used in production.
Geographical scope:	Czech Republic, Europe, Global
Electricity mix	Generation of electricity consumed within the production was based on the Czech residual electricity mix.
Characterization factors	Characterisation factors are based on Environmental Footprint (EF) 3.1
Conversion to mass	The conversion factor for recalculating to mass (including packaging) is 0.0006897. To express the results per 1 kg, the values should be multiplied by this factor.

System boundary

The system boundary is "Cradle to gate" with modules C1–C4 and module D (A1–A3 + C + D). It covers the production of raw materials, all relevant transport down to factory gate and manufacturing by CIDEM Hranice, a.s., deconstruction, transport to landfill and landfilling. The review framework comprises the following details:

- Raw materials acquisition and transport
- Further processing of raw materials
- Production operations
- Energy and water consumption
- Waste management
- Packaging of the final product for delivery
- Typical deconstruction



Module A1 covers the production of materials and components for CIDEM Hranice a.s. and it includes fuels and energy carriers (electricity, natural gas). This consists of the production of input materials such as wood, cement or limestone.

Module A2 covers the transport of materials into the site of production CIDEM Hranice a.s. Generic database processes with site-specific parameters for distances were used.

Module A3 covers on-site operated processes dealing with particleboard production and packaging. These processes are under the operational control of CIDEM Hranice a.s.. These are specific processes modelled based on data collection.

Module C1 covers estimated energy for deconstruction related to the mass of deconstructed material. In this study, the deconstruction is assumed to be carried out by a hydraulic medium-size excavator with 100 kW engine power.

Module C2 covers the transport of materials to a landfill site. Generic database processes were used with an estimated general distance of 100 kilometres by truck.

Module C3 covers waste processing before disposal. No waste processing is assumed in this study as all particleboard products are assumed as being sent to a landfill when they reach their end-of-life.

Module C4 covers the process for landfilling of particleboard products.

Module D covers the potential benefits and loads beyond the system boundary—specifically those related to the reuse, recovery, and recycling of materials and energy at the end of life of a construction product. No benefits are assumed in this study as particleboards are assumed as being landfilled.

A1 - A3 Product stage	Raw material supply	A1	X
	Transport	A2	X
	Manufacturing	A3	X
A4 - A5 Construction process	Transport from the gate to the site	A4	ND
	Assembly	A5	ND
B1 - B7 Use stage	Use	B1	ND
	Maintenance	B2	ND
	Repair	B3	ND
	Replacement	B4	ND
	Refurbishment	B5	ND
	Operational water use	B6	ND
	Operational energy use	B7	ND
C1 - C4 End of life stage	De-construction	C1	X
	Transport	C2	X
	Waste processing	C3	X
	Disposal	C4	X
D Benefits and loads beyond the system boundaries	Reuse- Recycling - Recovery Potential	D	X

X = declared module, ND = not declared module

ENVIRONMENTAL PERFORMANCE

Impact contribution

The share of the primary data on GWP-GHG indicator results is 11.7% for electricity and 2.7 % for transport for the **CETRIS – basic** product. The processes that contribute to more than 10% of the total GWP-GHG indicator are the supply chains of consumed cement materials and electrical energy.

The share of the primary data on GWP-GHG indicator results is 11.2% for electricity and 2.4 % for transport for the **CETRIS Eco – basic** product. The processes that contribute to more than 10% of the total GWP-GHG indicator are the supply chains of consumed cement materials and electrical energy.

Environmental indicators

Environmental indicator results per declared unit for each module are reported in the following tables.

Environmental indicator results are calculated according to ISO 14025 and EN 15804+A2:2019. Results are expressed per declared unit – 1 m³ of cement-bonded particleboard.

Life cycle impact assessment results of the particleboard CETRIS – basic.

Indicators	A1-A3	C1	C2	C3	C4	D
1. Environmental impact indicators [unit]						
GWP-GHG [kg CO ₂ eq.]	8.83E+02	9.64E-01	1.36E+01	0.00E+00	2.23E+01	0.00E+00
Climate Change - total [kg CO ₂ eq.]	4.09E+02	9.63E-01	1.36E+01	0.00E+00	4.97E+02	0.00E+00
Climate Change, fossil [kg CO ₂ eq.]	8.82E+02	9.52E-01	1.34E+01	0.00E+00	2.22E+01	0.00E+00
Climate Change, biogenic [kg CO ₂ eq.]	-4.73E+02	8.73E-04	1.19E-03	0.00E+00	4.75E+02	0.00E+00
Climate Change, land use and land use change [kg CO ₂ eq.]	7.16E-01	9.65E-03	1.38E-01	0.00E+00	9.08E-02	0.00E+00
Ozone depletion [kg CFC-11 eq.]	9.00E-07	1.56E-13	2.23E-12	0.00E+00	6.23E-11	0.00E+00
Acidification [Mole of H ⁺ eq.]	1.23E+00	4.81E-03	1.61E-02	0.00E+00	1.57E-01	0.00E+00
Eutrophication, freshwater [kg P eq.]	1.98E-02	2.53E-06	3.61E-05	0.00E+00	3.30E-05	0.00E+00
Eutrophication, marine [kg N eq.]	3.06E-01	2.31E-03	5.98E-03	0.00E+00	4.10E-02	0.00E+00
Eutrophication, terrestrial [Mole of N eq.]	3.42E+00	2.50E-02	6.28E-02	0.00E+00	4.47E-01	0.00E+00
Photochemical ozone formation, human health [kg NMVOC eq.]	9.71E-01	6.24E-03	1.42E-02	0.00E+00	1.23E-01	0.00E+00
Resource use, mineral and metals [kg Sb eq.]	7.53E-04	6.23E-08	8.92E-07	0.00E+00	1.37E-06	0.00E+00
Resource use, fossils [MJ]	4.80E+03	1.20E+01	1.72E+02	0.00E+00	2.91E+02	0.00E+00
Water use [m ³ world equiv.]	4.63E+01	4.29E-03	6.13E-02	0.00E+00	2.39E+00	0.00E+00
2. Resource use indicators [unit]						
Use of renewable primary energy (PERE) [MJ]	1.64E+03	9.05E-01	1.30E+01	0.00E+00	5.62E+01	0.00E+00
Use of renewable primary energy as raw materials (PERM) [MJ]	2.80E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (PERT) [MJ]	4.44E+03	9.05E-01	1.30E+01	0.00E+00	5.62E+01	0.00E+00
Use of non-renewable primary energy (PENRE) [MJ]	4.80E+03	1.20E+01	1.72E+02	0.00E+00	2.91E+02	0.00E+00
Use of non-renewable primary energy as raw materials (PENRM) [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources (PENRT) [MJ]	4.80E+03	1.20E+01	1.72E+02	0.00E+00	2.91E+02	0.00E+00
Input of secondary material (SM) [kg]	1.61E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E+00
Use of renewable secondary fuels (RSF) [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels (NRSF) [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water (FW) [m3]	1.80E+00	4.47E-04	6.40E-03	0.00E+00	7.00E-02	0.00E+00

Life cycle impact assessment results of the particleboard CETRIS – basic.

Indicators	A1-A3	C1	C2	C3	C4	D
3. Output flows and waste categories [unit]						
Hazardous waste disposed (HWD) [kg]	1.42E-06	4.82E-10	6.89E-09	0.00E+00	6.40E-08	0.00E+00
Non-hazardous waste disposed (NHWD) [kg]	9.21E+00	1.68E-03	2.40E-02	0.00E+00	1.45E+03	0.00E+00
Radioactive waste disposed (RWD) [kg]	3.81E-01	2.27E-05	3.24E-04	0.00E+00	3.04E-03	0.00E+00
Components for re-use [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling [kg]	3.77E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery [kg]	6.53E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity [MJ]	9.56E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal [MJ]	1.88E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4. Optional indicators [unit]						
Particulate matter [Disease incidences]	1.82E-05	5.62E-08	1.62E-07	0.00E+00	1.95E-06	0.00E+00
Ionising radiation, human health [kBq U235 eq.]	3.16E+01	3.26E-03	4.66E-02	0.00E+00	3.31E-01	0.00E+00
Ecotoxicity, freshwater [CTUe]	2.04E+03	1.56E+01	2.23E+02	0.00E+00	2.25E+02	0.00E+00
Human toxicity, cancer [CTUh]	1.27E-07	2.11E-10	3.01E-09	0.00E+00	3.87E-09	0.00E+00
Human toxicity, non-cancer [CTUh]	4.25E-06	1.18E-08	1.68E-07	0.00E+00	1.45E-07	0.00E+00
Land Use [Pt]	9.71E+03	5.31E+00	7.60E+01	0.00E+00	7.45E+01	0.00E+00

Life cycle impact assessment results of the particleboard CETRIS – serviced.

Indicators	A1-A3	C1	C2	C3	C4	D
1. Environmental impact indicators [unit]						
GWP-GHG [kg CO ₂ eq.]	8.92E+02	9.64E-01	1.36E+01	0.00E+00	2.23E+01	0.00E+00
Climate Change - total [kg CO ₂ eq.]	4.18E+02	9.63E-01	1.36E+01	0.00E+00	4.97E+02	0.00E+00
Climate Change, fossil [kg CO ₂ eq.]	8.91E+02	9.52E-01	1.34E+01	0.00E+00	2.22E+01	0.00E+00
Climate Change, biogenic [kg CO ₂ eq.]	-4.73E+02	8.73E-04	1.19E-03	0.00E+00	4.75E+02	0.00E+00
Climate Change, land use and land use change [kg CO ₂ eq.]	7.67E-01	9.65E-03	1.38E-01	0.00E+00	9.08E-02	0.00E+00
Ozone depletion [kg CFC-11 eq.]	9.00E-07	1.56E-13	2.23E-12	0.00E+00	6.23E-11	0.00E+00
Acidification [Mole of H ⁺ eq.]	1.27E+00	4.81E-03	1.61E-02	0.00E+00	1.57E-01	0.00E+00
Eutrophication, freshwater [kg P eq.]	1.98E-02	2.53E-06	3.61E-05	0.00E+00	3.30E-05	0.00E+00
Eutrophication, marine [kg N eq.]	3.17E-01	2.31E-03	5.98E-03	0.00E+00	4.10E-02	0.00E+00
Eutrophication, terrestrial [Mole of N eq.]	3.53E+00	2.50E-02	6.28E-02	0.00E+00	4.47E-01	0.00E+00
Photochemical ozone formation, human health [kg NMVOC eq.]	1.00E+00	6.24E-03	1.42E-02	0.00E+00	1.23E-01	0.00E+00
Resource use, mineral and metals [kg Sb eq.]	7.54E-04	6.23E-08	8.92E-07	0.00E+00	1.37E-06	0.00E+00
Resource use, fossils [MJ]	4.93E+03	1.20E+01	1.72E+02	0.00E+00	2.91E+02	0.00E+00
Water use [m ³ world equiv.]	4.69E+01	4.29E-03	6.13E-02	0.00E+00	2.39E+00	0.00E+00
2. Resource use indicators [unit]						
Use of renewable primary energy (PERE) [MJ]	1.66E+03	9.05E-01	1.30E+01	0.00E+00	5.62E+01	0.00E+00
Use of renewable primary energy as raw materials (PERM) [MJ]	2.80E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (PERT) [MJ]	4.46E+03	9.05E-01	1.30E+01	0.00E+00	5.62E+01	0.00E+00
Use of non-renewable primary energy (PENRE) [MJ]	4.93E+03	1.20E+01	1.72E+02	0.00E+00	2.91E+02	0.00E+00
Use of non-renewable primary energy as raw materials (PENRM) [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources (PENRT) [MJ]	4.93E+03	1.20E+01	1.72E+02	0.00E+00	2.91E+02	0.00E+00
Input of secondary material (SM) [kg]	1.61E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E+00
Use of renewable secondary fuels (RSF) [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels (NRSF) [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water (FW) [m3]	1.83E+00	4.47E-04	6.40E-03	0.00E+00	7.00E-02	0.00E+00

Life cycle impact assessment results of the particleboard CETRIS – serviced.

Indicators	A1-A3	C1	C2	C3	C4	D
3. Output flows and waste categories [unit]						
Hazardous waste disposed (HWD) [kg]	1.44E-06	4.82E-10	6.89E-09	0.00E+00	6.40E-08	0.00E+00
Non-hazardous waste disposed (NHWD) [kg]	3.30E+02	1.68E-03	2.40E-02	0.00E+00	1.45E+03	0.00E+00
Radioactive waste disposed (RWD) [kg]	3.86E-01	2.27E-05	3.24E-04	0.00E+00	3.04E-03	0.00E+00
Components for re-use [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling [kg]	3.77E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery [kg]	6.53E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity [MJ]	9.56E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal [MJ]	1.88E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4. Optional indicators [unit]						
Particulate matter [Disease incidences]	1.87E-05	5.62E-08	1.62E-07	0.00E+00	1.95E-06	0.00E+00
Ionising radiation, human health [kBq U235 eq.]	3.19E+01	3.26E-03	4.66E-02	0.00E+00	3.31E-01	0.00E+00
Ecotoxicity, freshwater [CTUe]	2.14E+03	1.56E+01	2.23E+02	0.00E+00	2.25E+02	0.00E+00
Human toxicity, cancer [CTUh]	1.29E-07	2.11E-10	3.01E-09	0.00E+00	3.87E-09	0.00E+00
Human toxicity, non-cancer [CTUh]	4.32E-06	1.18E-08	1.68E-07	0.00E+00	1.45E-07	0.00E+00
Land Use [Pt]	9.74E+03	5.31E+00	7.60E+01	0.00E+00	7.45E+01	0.00E+00

Life cycle impact assessment results of the particleboard CETRIS – painted.

Indicators	A1-A3	C1	C2	C3	C4	D
1. Environmental impact indicators [unit]						
GWP-GHG [kg CO ₂ eq.]	1.38E+03	9.64E-01	1.36E+01	0.00E+00	2.23E+01	0.00E+00
Climate Change - total [kg CO ₂ eq.]	9.09E+02	9.63E-01	1.36E+01	0.00E+00	4.97E+02	0.00E+00
Climate Change, fossil [kg CO ₂ eq.]	1.38E+03	9.52E-01	1.34E+01	0.00E+00	2.22E+01	0.00E+00
Climate Change, biogenic [kg CO ₂ eq.]	-4.71E+02	8.73E-04	1.19E-03	0.00E+00	4.75E+02	0.00E+00
Climate Change, land use and land use change [kg CO ₂ eq.]	9.43E-01	9.65E-03	1.38E-01	0.00E+00	9.08E-02	0.00E+00
Ozone depletion [kg CFC-11 eq.]	9.02E-07	1.56E-13	2.23E-12	0.00E+00	6.23E-11	0.00E+00
Acidification [Mole of H ⁺ eq.]	2.43E+00	4.81E-03	1.61E-02	0.00E+00	1.57E-01	0.00E+00
Eutrophication, freshwater [kg P eq.]	2.03E-02	2.53E-06	3.61E-05	0.00E+00	3.30E-05	0.00E+00
Eutrophication, marine [kg N eq.]	5.75E-01	2.31E-03	5.98E-03	0.00E+00	4.10E-02	0.00E+00
Eutrophication, terrestrial [Mole of N eq.]	6.38E+00	2.50E-02	6.28E-02	0.00E+00	4.47E-01	0.00E+00
Photochemical ozone formation, human health [kg NMVOC eq.]	1.85E+00	6.24E-03	1.42E-02	0.00E+00	1.23E-01	0.00E+00
Resource use, mineral and metals [kg Sb eq.]	1.69E-03	6.23E-08	8.92E-07	0.00E+00	1.37E-06	0.00E+00
Resource use, fossils [MJ]	1.32E+04	1.20E+01	1.72E+02	0.00E+00	2.91E+02	0.00E+00
Water use [m ³ world equiv.]	9.07E+01	4.29E-03	6.13E-02	0.00E+00	2.39E+00	0.00E+00
2. Resource use indicators [unit]						
Use of renewable primary energy (PERE) [MJ]	2.52E+03	9.05E-01	1.30E+01	0.00E+00	5.62E+01	0.00E+00
Use of renewable primary energy as raw materials (PERM) [MJ]	2.80E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (PERT) [MJ]	5.33E+03	9.05E-01	1.30E+01	0.00E+00	5.62E+01	0.00E+00
Use of non-renewable primary energy (PENRE) [MJ]	1.32E+04	1.20E+01	1.72E+02	0.00E+00	2.91E+02	0.00E+00
Use of non-renewable primary energy as raw materials (PENRM) [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources (PENRT) [MJ]	1.32E+04	1.20E+01	1.72E+02	0.00E+00	2.91E+02	0.00E+00
Input of secondary material (SM) [kg]	2.41E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E+00
Use of renewable secondary fuels (RSF) [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels (NRSF) [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water (FW) [m3]	4.19E+00	4.47E-04	6.40E-03	0.00E+00	7.00E-02	0.00E+00

Life cycle impact assessment results of the particleboard CETRIS – painted.

Indicators	A1-A3	C1	C2	C3	C4	D
3. Output flows and waste categories [unit]						
Hazardous waste disposed (HWD) [kg]	2.75E-06	4.82E-10	6.89E-09	0.00E+00	6.40E-08	0.00E+00
Non-hazardous waste disposed (NHWD) [kg]	2.47E+02	1.68E-03	2.40E-02	0.00E+00	1.45E+03	0.00E+00
Radioactive waste disposed (RWD) [kg]	1.13E+00	2.27E-05	3.24E-04	0.00E+00	3.04E-03	0.00E+00
Components for re-use [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling [kg]	3.77E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery [kg]	2.61E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity [MJ]	3.71E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal [MJ]	7.04E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4. Optional indicators [unit]						
Particulate matter [Disease incidences]	3.21E-05	5.62E-08	1.62E-07	0.00E+00	1.95E-06	0.00E+00
Ionising radiation, human health [kBq U235 eq.]	8.26E+01	3.26E-03	4.66E-02	0.00E+00	3.31E-01	0.00E+00
Ecotoxicity, freshwater [CTUe]	5.98E+03	1.56E+01	2.23E+02	0.00E+00	2.25E+02	0.00E+00
Human toxicity, cancer [CTUh]	2.21E-07	2.11E-10	3.01E-09	0.00E+00	3.87E-09	0.00E+00
Human toxicity, non-cancer [CTUh]	7.06E-06	1.18E-08	1.68E-07	0.00E+00	1.45E-07	0.00E+00
Land Use [Pt]	1.11E+04	5.31E+00	7.60E+01	0.00E+00	7.45E+01	0.00E+00

Life cycle impact assessment results of the particleboard CETRIS – serviced and painted.

Indicators	A1-A3	C1	C2	C3	C4	D
1. Environmental impact indicators [unit]						
GWP-GHG [kg CO ₂ eq.]	1.39E+03	9.64E-01	1.36E+01	0.00E+00	2.23E+01	0.00E+00
Climate Change - total [kg CO ₂ eq.]	9.19E+02	9.63E-01	1.36E+01	0.00E+00	4.97E+02	0.00E+00
Climate Change, fossil [kg CO ₂ eq.]	1.39E+03	9.52E-01	1.34E+01	0.00E+00	2.22E+01	0.00E+00
Climate Change, biogenic [kg CO ₂ eq.]	-4.71E+02	8.73E-04	1.19E-03	0.00E+00	4.75E+02	0.00E+00
Climate Change, land use and land use change [kg CO ₂ eq.]	9.93E-01	9.65E-03	1.38E-01	0.00E+00	9.08E-02	0.00E+00
Ozone depletion [kg CFC-11 eq.]	9.02E-07	1.56E-13	2.23E-12	0.00E+00	6.23E-11	0.00E+00
Acidification [Mole of H ⁺ eq.]	2.47E+00	4.81E-03	1.61E-02	0.00E+00	1.57E-01	0.00E+00
Eutrophication, freshwater [kg P eq.]	2.03E-02	2.53E-06	3.61E-05	0.00E+00	3.30E-05	0.00E+00
Eutrophication, marine [kg N eq.]	5.86E-01	2.31E-03	5.98E-03	0.00E+00	4.10E-02	0.00E+00
Eutrophication, terrestrial [Mole of N eq.]	6.49E+00	2.50E-02	6.28E-02	0.00E+00	4.47E-01	0.00E+00
Photochemical ozone formation, human health [kg NMVOC eq.]	1.88E+00	6.24E-03	1.42E-02	0.00E+00	1.23E-01	0.00E+00
Resource use, mineral and metals [kg Sb eq.]	1.69E-03	6.23E-08	8.92E-07	0.00E+00	1.37E-06	0.00E+00
Resource use, fossils [MJ]	1.33E+04	1.20E+01	1.72E+02	0.00E+00	2.91E+02	0.00E+00
Water use [m ³ world equiv.]	9.12E+01	4.29E-03	6.13E-02	0.00E+00	2.39E+00	0.00E+00
2. Resource use indicators [unit]						
Use of renewable primary energy (PERE) [MJ]	2.54E+03	9.05E-01	1.30E+01	0.00E+00	5.62E+01	0.00E+00
Use of renewable primary energy as raw materials (PERM) [MJ]	2.80E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (PERT) [MJ]	5.34E+03	9.05E-01	1.30E+01	0.00E+00	5.62E+01	0.00E+00
Use of non-renewable primary energy (PENRE) [MJ]	1.33E+04	1.20E+01	1.72E+02	0.00E+00	2.91E+02	0.00E+00
Use of non-renewable primary energy as raw materials (PENRM) [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources (PENRT) [MJ]	1.33E+04	1.20E+01	1.72E+02	0.00E+00	2.91E+02	0.00E+00
Input of secondary material (SM) [kg]	2.41E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E+00
Use of renewable secondary fuels (RSF) [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels (NRSF) [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water (FW) [m3]	4.22E+00	4.47E-04	6.40E-03	0.00E+00	7.00E-02	0.00E+00

Life cycle impact assessment results of the particleboard CETRIS – serviced and painted.

Indicators	A1-A3	C1	C2	C3	C4	D
3. Output flows and waste categories [unit]						
Hazardous waste disposed (HWD) [kg]	2.77E-06	4.82E-10	6.89E-09	0.00E+00	6.40E-08	0.00E+00
Non-hazardous waste disposed (NHWD) [kg]	5.68E+02	1.68E-03	2.40E-02	0.00E+00	1.45E+03	0.00E+00
Radioactive waste disposed (RWD) [kg]	1.14E+00	2.27E-05	3.24E-04	0.00E+00	3.04E-03	0.00E+00
Components for re-use [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling [kg]	3.77E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery [kg]	2.61E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity [MJ]	3.71E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal [MJ]	7.04E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4. Optional indicators [unit]						
Particulate matter [Disease incidences]	3.26E-05	5.62E-08	1.62E-07	0.00E+00	1.95E-06	0.00E+00
Ionising radiation, human health [kBq U235 eq.]	8.30E+01	3.26E-03	4.66E-02	0.00E+00	3.31E-01	0.00E+00
Ecotoxicity, freshwater [CTUe]	6.08E+03	1.56E+01	2.23E+02	0.00E+00	2.25E+02	0.00E+00
Human toxicity, cancer [CTUh]	2.22E-07	2.11E-10	3.01E-09	0.00E+00	3.87E-09	0.00E+00
Human toxicity, non-cancer [CTUh]	7.14E-06	1.18E-08	1.68E-07	0.00E+00	1.45E-07	0.00E+00
Land Use [Pt]	1.11E+04	5.31E+00	7.60E+01	0.00E+00	7.45E+01	0.00E+00

Life cycle impact assessment results of the particleboard CETRIS Eco – basic.

Indicators	A1-A3	C1	C2	C3	C4	D
1. Environmental impact indicators [unit]						
GWP-GHG [kg CO ₂ eq.]	9.91E+02	9.64E-01	1.36E+01	0.00E+00	2.23E+01	0.00E+00
Climate Change - total [kg CO ₂ eq.]	4.05E+02	9.63E-01	1.36E+01	0.00E+00	6.09E+02	0.00E+00
Climate Change, fossil [kg CO ₂ eq.]	9.90E+02	9.52E-01	1.34E+01	0.00E+00	2.22E+01	0.00E+00
Climate Change, biogenic [kg CO ₂ eq.]	-5.85E+02	8.73E-04	1.19E-03	0.00E+00	5.87E+02	0.00E+00
Climate Change, land use and land use change [kg CO ₂ eq.]	8.10E-01	9.65E-03	1.38E-01	0.00E+00	9.08E-02	0.00E+00
Ozone depletion [kg CFC-11 eq.]	9.07E-07	1.56E-13	2.23E-12	0.00E+00	6.23E-11	0.00E+00
Acidification [Mole of H ⁺ eq.]	1.30E+00	4.81E-03	1.61E-02	0.00E+00	1.57E-01	0.00E+00
Eutrophication, freshwater [kg P eq.]	2.06E-02	2.53E-06	3.61E-05	0.00E+00	3.30E-05	0.00E+00
Eutrophication, marine [kg N eq.]	3.28E-01	2.31E-03	5.98E-03	0.00E+00	4.10E-02	0.00E+00
Eutrophication, terrestrial [Mole of N eq.]	3.64E+00	2.50E-02	6.28E-02	0.00E+00	4.47E-01	0.00E+00
Photochemical ozone formation, human health [kg NMVOC eq.]	1.05E+00	6.24E-03	1.42E-02	0.00E+00	1.23E-01	0.00E+00
Resource use, mineral and metals [kg Sb eq.]	7.62E-04	6.23E-08	8.92E-07	0.00E+00	1.37E-06	0.00E+00
Resource use, fossils [MJ]	5.21E+03	1.20E+01	1.72E+02	0.00E+00	2.91E+02	0.00E+00
Water use [m ³ world equiv.]	4.49E+01	4.29E-03	6.13E-02	0.00E+00	2.39E+00	0.00E+00
2. Resource use indicators [unit]						
Use of renewable primary energy (PERE) [MJ]	1.74E+03	9.05E-01	1.30E+01	0.00E+00	5.62E+01	0.00E+00
Use of renewable primary energy as raw materials (PERM) [MJ]	3.46E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (PERT) [MJ]	5.20E+03	9.05E-01	1.30E+01	0.00E+00	5.62E+01	0.00E+00
Use of non-renewable primary energy (PENRE) [MJ]	5.21E+03	1.20E+01	1.72E+02	0.00E+00	2.91E+02	0.00E+00
Use of non-renewable primary energy as raw materials (PENRM) [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources (PENRT) [MJ]	5.21E+03	1.20E+01	1.72E+02	0.00E+00	2.91E+02	0.00E+00
Input of secondary material (SM) [kg]	1.61E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E+00
Use of renewable secondary fuels (RSF) [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels (NRSF) [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water (FW) [m3]	1.82E+00	4.47E-04	6.40E-03	0.00E+00	7.00E-02	0.00E+00

Life cycle impact assessment results of the particleboard CETRIS Eco – basic.

Indicators	A1-A3	C1	C2	C3	C4	D
3. Output flows and waste categories [unit]						
Hazardous waste disposed (HWD) [kg]	1.61E-06	4.82E-10	6.89E-09	0.00E+00	6.40E-08	0.00E+00
Non-hazardous waste disposed (NHWD) [kg]	1.04E+01	1.68E-03	2.40E-02	0.00E+00	1.45E+03	0.00E+00
Radioactive waste disposed (RWD) [kg]	4.11E-01	2.27E-05	3.24E-04	0.00E+00	3.04E-03	0.00E+00
Components for re-use [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling [kg]	3.77E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery [kg]	6.53E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity [MJ]	9.56E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal [MJ]	1.88E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4. Optional indicators [unit]						
Particulate matter [Disease incidences]	1.99E-05	5.62E-08	1.62E-07	0.00E+00	1.95E-06	0.00E+00
Ionising radiation, human health [kBq U235 eq.]	3.39E+01	3.26E-03	4.66E-02	0.00E+00	3.31E-01	0.00E+00
Ecotoxicity, freshwater [CTUe]	2.17E+03	1.56E+01	2.23E+02	0.00E+00	2.25E+02	0.00E+00
Human toxicity, cancer [CTUh]	1.33E-07	2.11E-10	3.01E-09	0.00E+00	3.87E-09	0.00E+00
Human toxicity, non-cancer [CTUh]	4.62E-06	1.18E-08	1.68E-07	0.00E+00	1.45E-07	0.00E+00
Land Use [Pt]	1.11E+04	5.31E+00	7.60E+01	0.00E+00	7.45E+01	0.00E+00

Life cycle impact assessment results of the particleboard CETRIS Eco – serviced.

Indicators	A1-A3	C1	C2	C3	C4	D
1. Environmental impact indicators [unit]						
GWP-GHG [kg CO ₂ eq.]	1.00E+03	9.64E-01	1.36E+01	0.00E+00	2.23E+01	0.00E+00
Climate Change - total [kg CO ₂ eq.]	4.15E+02	9.63E-01	1.36E+01	0.00E+00	6.09E+02	0.00E+00
Climate Change, fossil [kg CO ₂ eq.]	9.99E+02	9.52E-01	1.34E+01	0.00E+00	2.22E+01	0.00E+00
Climate Change, biogenic [kg CO ₂ eq.]	-5.85E+02	8.73E-04	1.19E-03	0.00E+00	5.87E+02	0.00E+00
Climate Change, land use and land use change [kg CO ₂ eq.]	8.61E-01	9.65E-03	1.38E-01	0.00E+00	9.08E-02	0.00E+00
Ozone depletion [kg CFC-11 eq.]	9.07E-07	1.56E-13	2.23E-12	0.00E+00	6.23E-11	0.00E+00
Acidification [Mole of H ⁺ eq.]	1.34E+00	4.81E-03	1.61E-02	0.00E+00	1.57E-01	0.00E+00
Eutrophication, freshwater [kg P eq.]	2.06E-02	2.53E-06	3.61E-05	0.00E+00	3.30E-05	0.00E+00
Eutrophication, marine [kg N eq.]	3.39E-01	2.31E-03	5.98E-03	0.00E+00	4.10E-02	0.00E+00
Eutrophication, terrestrial [Mole of N eq.]	3.76E+00	2.50E-02	6.28E-02	0.00E+00	4.47E-01	0.00E+00
Photochemical ozone formation, human health [kg NMVOC eq.]	1.08E+00	6.24E-03	1.42E-02	0.00E+00	1.23E-01	0.00E+00
Resource use, mineral and metals [kg Sb eq.]	7.63E-04	6.23E-08	8.92E-07	0.00E+00	1.37E-06	0.00E+00
Resource use, fossils [MJ]	5.34E+03	1.20E+01	1.72E+02	0.00E+00	2.91E+02	0.00E+00
Water use [m ³ world equiv.]	4.54E+01	4.29E-03	6.13E-02	0.00E+00	2.39E+00	0.00E+00
2. Resource use indicators [unit]						
Use of renewable primary energy (PERE) [MJ]	1.75E+03	9.05E-01	1.30E+01	0.00E+00	5.62E+01	0.00E+00
Use of renewable primary energy as raw materials (PERM) [MJ]	3.46E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (PERT) [MJ]	5.22E+03	9.05E-01	1.30E+01	0.00E+00	5.62E+01	0.00E+00
Use of non-renewable primary energy (PENRE) [MJ]	5.34E+03	1.20E+01	1.72E+02	0.00E+00	2.91E+02	0.00E+00
Use of non-renewable primary energy as raw materials (PENRM) [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-renewable primary energy resources (PENRT) [MJ]	5.34E+03	1.20E+01	1.72E+02	0.00E+00	2.91E+02	0.00E+00
Input of secondary material (SM) [kg]	2.16E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.00E+00
Use of renewable secondary fuels (RSF) [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels (NRSF) [MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water (FW) [m3]	1.84E+00	4.47E-04	6.40E-03	0.00E+00	7.00E-02	0.00E+00

Life cycle impact assessment results of the particleboard CETRIS Eco – serviced.

Indicators	A1-A3	C1	C2	C3	C4	D
3. Output flows and waste categories [unit]						
Hazardous waste disposed (HWD) [kg]	1.63E-06	4.82E-10	6.89E-09	0.00E+00	6.40E-08	0.00E+00
Non-hazardous waste disposed (NHWD) [kg]	3.31E+02	1.68E-03	2.40E-02	0.00E+00	1.45E+03	0.00E+00
Radioactive waste disposed (RWD) [kg]	4.15E-01	2.27E-05	3.24E-04	0.00E+00	3.04E-03	0.00E+00
Components for re-use [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling [kg]	3.77E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery [kg]	6.53E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity [MJ]	9.56E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal [MJ]	1.88E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4. Optional indicators [unit]						
Particulate matter [Disease incidences]	2.04E-05	5.62E-08	1.62E-07	0.00E+00	1.95E-06	0.00E+00
Ionising radiation, human health [kBq U235 eq.]	3.43E+01	3.26E-03	4.66E-02	0.00E+00	3.31E-01	0.00E+00
Ecotoxicity, freshwater [CTUe]	2.28E+03	1.56E+01	2.23E+02	0.00E+00	2.25E+02	0.00E+00
Human toxicity, cancer [CTUh]	1.35E-07	2.11E-10	3.01E-09	0.00E+00	3.87E-09	0.00E+00
Human toxicity, non-cancer [CTUh]	4.69E-06	1.18E-08	1.68E-07	0.00E+00	1.45E-07	0.00E+00
Land Use [Pt]	1.11E+04	5.31E+00	7.60E+01	0.00E+00	7.45E+01	0.00E+00

RELEASE OF DANGEROUS SUBSTANCES DURING THE USE STAGE

No health and environmental impacts during use are observed.

ADDITIONAL ENVIRONMENTAL INFORMATION

In CIDEM Hranice, a.s. – CETRIS division continuous attention is paid to the quality of our products. Already back in 1996 we obtained the EU ISO 9002 quality certificate awarded by the international accredited certification body, Lloyd's Register Quality Assurance. After a new standard was published, this system was recertified in 2003 according to the new ISO 9001 standard. The production of CETRIS[®] cement-bonded particleboard is further supervised by authorized and notified entities. The company exports the products to all of Europe. The cement-bonded particleboards are certified according to European harmonized standards.

Company has established and applied a combined management system for development, production, sales and services of its products.

Obtained certificates EN ISO 9001, and the commitment of the whole company's staff to quality give the customers a guarantee of a quality standard of products.

Positive attitude to the environment of CIDEM Hranice, a.s. is also declared by the certificate of PEFC obtained according to TD CFCS 2002:2013, ensuring that all wood matter used in CIDEM Hranice originated from verified resources.

For recommended use of cement-bonded particleboards follow <http://www.cidem.cz>. After reaching the end-of-life, it is possible to treat waste particleboards as common non-hazardous waste.

REFERENCES

ISO 14020:2000 Environmental labels and declarations — General principles, 2000-09

ISO 14025: EN ISO 14025:2006-11: Environmental labels and declarations - Type III environmental declarations — Principles and procedures

ISO 14040:2006 Environmental management — Life cycle assessment — Principles and framework, 2006-07

ISO 14044:2006 Environmental management — Life cycle assessment — Requirements and guidelines, 2006-07

EN 15804:2012 +A2:2019/AC:2021 European Committee for Standardization: Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products, 2021.

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