



LCA practitioner:

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Summary:

This LCA study was developed with an aim to collect all needed data Environmental Product Declaration based on ISO 14025:2006 Environmental labels and declarations -- Type III environmental declarations and EN 15804:2012 + A2:2019 of the CETRIS® cement-bonded particleboard produced by CIDEM Hranice, a.s.

Notice:

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Abbreviations:

ADP elem. Abiotic Depletion [kg Sb-Equiv.]

ADP fos. Abiotic Depletion [MJ]

AP Acidification Potential [kg SO₂-Equiv.]

CML 2001 midpoint characterization method

DU declaration unit

EP Eutrophication Potential [kg Phosphate-Equiv.]

FU functional unit

DU declared unit

GWP Global Warming Potential [kg CO₂-Equiv.]

LCA Life Cycle Assessment

LCI Life-Cycle Inventory

LCIA Life Cycle Impact Assessment

ODP Ozone Layer Depletion Potential [kg R11-Equiv.]

POCP Photochem. Ozone Creation Potential [kg Ethene-Equiv.]

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1 GENERAL INFORMATION

1.1 COMMISSIONER OF LCA STUDY, LCA PRACTITIONER

A commissioner of this LCA study is CIDEM Hranice, a.s. with the following address:
Skalní 1088, Hranice I – Město, 753 01 Hranice, the Czech Republic.

An LCA practitioner of this study is LCA studio

Contact person: doc. Ing. Vladimír Kočí, Ph.D. and Ing. Jan Pešta
Šárecká 5, 160 00 Praha 6, Czech Republic, www.lcastudio.cz.

1.2 DATE OF ISSUE OF LCA REPORT

This LCA study was issued on September 30th, 2020.

1.3 STATEMENT THAT THE LIFE CYCLE ASSESSMENT STUDY HAS BEEN PERFORMED UNDER THE REQUIREMENTS OF EN 15804 AND APPLICABLE PCRS

This Life Cycle Assessment study has been performed under the requirements of EN 15804:2012 + A2:2019.

1.4 OTHER INDEPENDENT VERIFICATION OF THE DATA GIVEN IN THE LCI/LCA DOCUMENTATION?

No additional independent verification of the data given in the LCI/LCA documentation.

2 STUDY GOAL

2.1 REASONS FOR PERFORMING THE LIFE CYCLE ASSESSMENT

The reason for performing this LCA study is the development of EPD for the CETRIS® cement-bonded particleboard produced by CIDEM Hranice, a.s.

2.2 INTENDED APPLICATION

The LCA study is designed in such a way that it allows B2B communication for environmental assessments of buildings and further development of EPD of the CETRIS® cement-bonded particleboard produced by CIDEM Hranice, a.s.

2.3 TARGET GROUP

Results presented in this study are used mainly for B2B, respectively B2C communication.

3 FUNCTIONAL UNIT / DECLARED UNIT

3.1 FUNCTIONAL / DECLARED UNIT

The functional respectively declared unit used in this study is 1 m³ of cement-bonded particleboard.

3.1.1 TECHNICAL SPECIFICATION

As technical and operational characteristics of each product are a huge set of data, the informational sheet of each product is enclosed in the supplement of the study and or is available online in the [technical datasheet](#).

3.2 CONVERSION TO MASS

The weight of 1 m³ of cement-bonded particleboard is 1350 kg. Therefore, density is 1350 kg/m³.

3.3 PRODUCT GROUPS

This LCA study is developed for 4 products (described later) with almost the same material composition. No averages are formed. Every product type is calculated separately, and its results are expressed in a specific column.

3.3.1 CALCULATION RULES FOR THE FORMATION OF AVERAGES

No averages of product groups are calculated. Inventarisation and characterization for each type of product are calculated separately.

3.3.2 REPRESENTATIVENESS OF AVERAGES

There is no need for representativeness of average values, as no averages of product groups are calculated.

4 PRODUCT DESCRIPTION

4.1 COMPOSITION OF THE PRODUCT

The composition of the cement-bonded particleboard is shown in the following table.

The study was conducted for four products:

- 1) cement-bonded particleboard CETRIS – basic
- 2) cement-bonded particleboard CETRIS - custom-made (Cut for a specific shape of specific surface)
- 3) cement-bonded particleboard CETRIS – painted (without other services)
- 4) cement-bonded particleboard CETRIS painted, with additional services

The particular mass description for each type is confidential, but the main components of the mixture for pressing and their amount per average 1 m³ of the board are described in Table 1.

Table 1 Average composition of 1 m³ of cement-bonded particleboard

Component	Amount	Unit
Wooden chips	3	m ³
Cement CEMII/A-S 42,5R	910	kg
Aluminium sulfate	11	kg
Water (surface)	168	l
Sodium silicate	33	kg
Slag	0,574	kg

Wooden inputs are described in Table 3. Density of spruce round wood is 450 kg/m³. Density of wood chips is 160 kg/m³ and density of wood pulp is 170 kg/m³.

Positive attitude to the environment of CIDEM Hranice 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.

4.2 DESCRIPTION OF TECHNICAL AND FUNCTIONAL CHARACTERISTICS AND AREA OF INTENDED APPLICATION IN THE BUILDING

CIDEM Hranice, a.s. manufacture cement bonded particle board with different thickness and area but similar composition. The intended application of the board is as a construction product for cases, where it is simultaneously required moisture resistance, strength, non-combustibility, environmental and sanitary safety.

CETRIS® boards are free of asbestos and formaldehyde, resistant to insects, and fungal activity. They are non-flammable and sound-proofed. Preparing boards on site is possible with conventional woodworking tools. When using CETRIS® boards without surface treatment, the composition of the plate and its origin - cement goods - must be respected.

CETRIS® cement-bonded particleboards are non-structural elements used for internal or external applications in dry or humid conditions (thickness < 16,0 mm) and structural elements used for internal or external applications in dry or humid conditions (thickness

$\geq 16,0$ mm). The boards can be used in wall and floor structures, in fire-resistant applications and as façade and balcony boards.

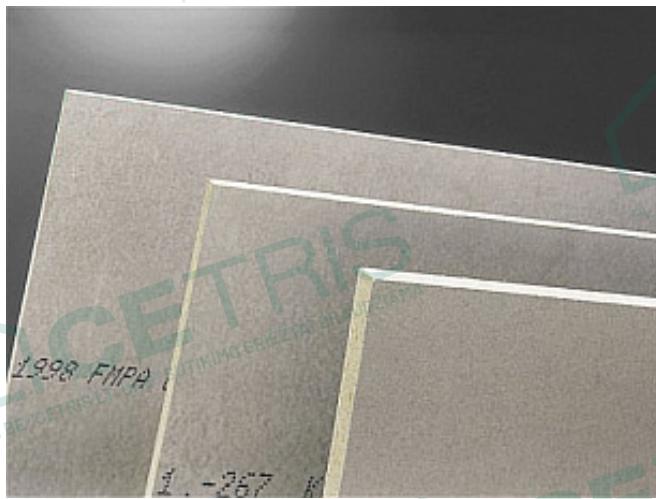


Figure 1 Cement bonded particle boards

4.3 FLOW DIAGRAM OF MAIN PRODUCTION PROCESSES AND VISUALIZATION OF SYSTEM BOUNDARIES

In the following figure system boundaries using modules included in the study are visualized.

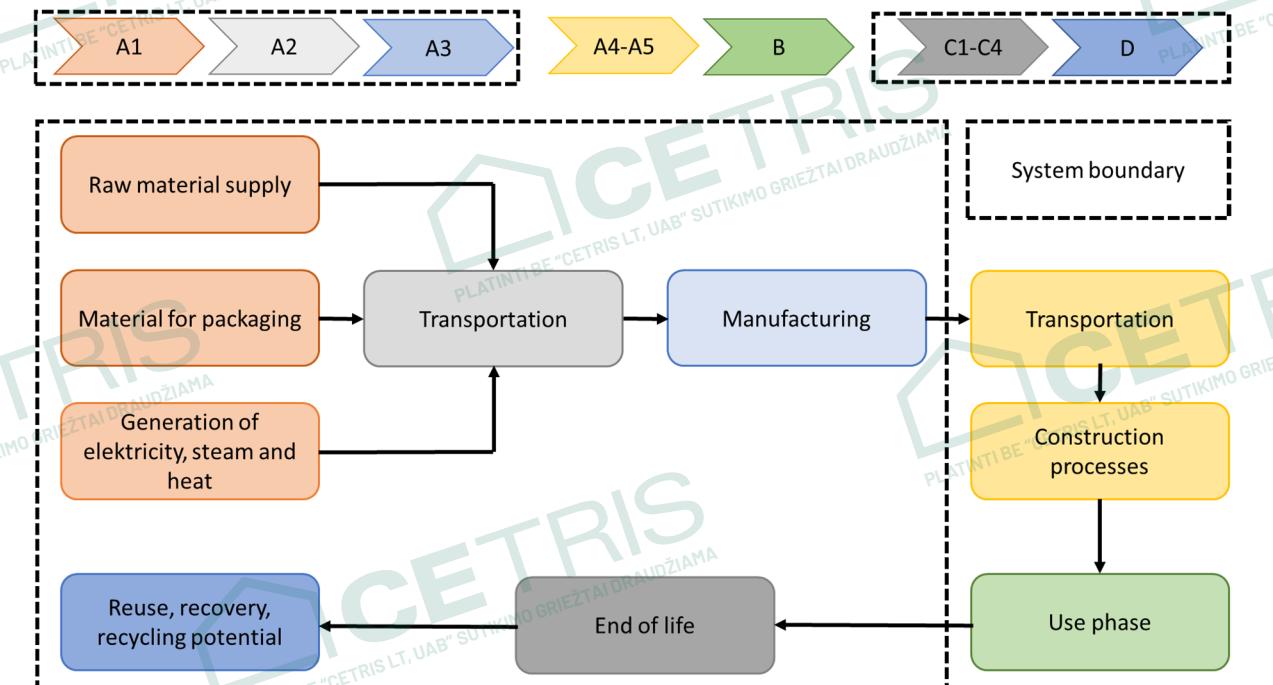


Figure 2 System boundary (cradle to gate with modules C1-C4 and module D)

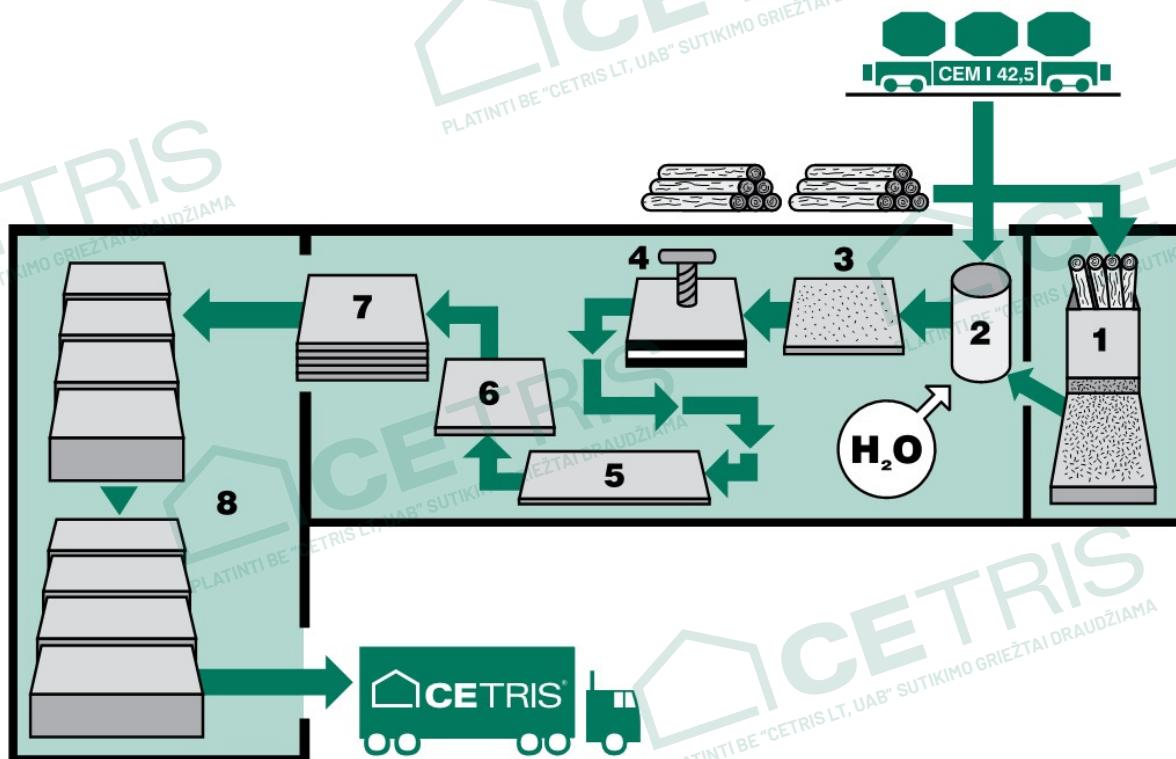


Figure 3 Production schema (1 spilling, 2 preparation of mixture, 3 layering of boards, 4 pressing, 5 drying, 6 formatting, 7 storage, 8 transport)

5 SYSTEM BOUNDARIES

5.1 DESCRIPTION OF THE LIFE-CYCLE STAGES/MODULES DECLARED

This EPD is based on system boundary called "cradle to gate with modules C1-C4 and module D" according to EN 15 804+A2.

5.2 COMPREHENSIVE DECLARATION OF MODULES A1 TO A3 AS A MINIMUM REQUIREMENT, IF NECESSARY AS AN AGGREGATED MODULE A1- A3

The general description of the system boundary is shown in the following table.

Table 2 General description of the system boundary (D = Declared (Included in LCA); MND = Module Not Declared).

A1 - A3 Product stage	Raw material supply	A1	D
	Transport	A2	D
	Manufacturing	A3	D
A4 - A5 Construction process	Transport from the gate to the site	A4	MND
	Assembly	A5	MND
B1 - B7 Use stage	Use	B1	MND

	Maintenance	B2	MND
	Repair	B3	MND
	Replacement	B4	MND
	Refurbishment	B5	MND
	Operational water use	B6	MND
	Operational energy use	B7	MND
C1 - C4 End of life stage	De-construction	C1	D
	Transport	C2	D
	Waste processing	C3	D
	Disposal	C4	D
D Benefits and loads beyond the system boundaries	Reuse- Recycling - Recovery Potential	D	D

5.3 A1 TO A3: SYSTEM BOUNDARY

5.3.1 CLEAR DESCRIPTION OF WHAT THE MODULES COVER

Module A1 covers the production of materials for CIDEM Hranice, a.s., and also it includes fuels and energy carriers. This consists of the production of wooden chips, cement CEMII/A-S 42,5R, aluminium sulfate, sodium silicate, and slag. Also, it includes water pumping from the surface reservoir. Besides this, it has even packaging materials: PE (bags, foil), PP (foil), wood pallets, paper (cardboard edges for transport).

For painted boards, this module also includes paintings.

Module A2 covers the transport of material into the site of production CIDEM Hranice, a.s. and internal transport. Generic DB processes with site-specific parameters for distance were used.

Module A3 covers on-site operated processes dealing with spilling, preparation of the mixture, layering of boards, pressing, drying, formatting, storage, transport, and preparing for the expedition. These processes are under the operational control of CIDEM Hranice, a.s. and all of them are specific processes modelled based data collection. Treatment and or disposal of waste generated from the manufacturing processes is also included in this module.

5.3.2 SYSTEM BOUNDARY TO NATURE (E.G. FOREST IN WOOD PRODUCTION)

Boundaries to nature cover flow of materials and energy resources from nature into the system. All relevant elementary flows (emissions) to air, water, and soil across the system boundary when they are emitted from or leaving the product system are accounted for.

5.3.3 USE OF SECONDARY MATERIALS AND SECONDARY FUELS AND WASTE PRODUCED (CHECK END-OF- WASTE STATE)

No secondary fuels are used in production. The only secondary material slag is used. Generic process data for slag production was used.

5.3.4 END-OF-WASTE STATE

No specification is needed.

5.3.5 CERTIFICATE OF GREEN ELECTRICITY

No certificate is considered.

5.3.6 IF APPLICABLE: REFERENCE TO THE CERTIFICATE OF THE OFFSETTING OF CO2

Not applicable.

5.4 A1 TO A3: ALLOCATION OF CO-PRODUCTS

5.4.1 SELECTION OF THE ALLOCATION FACTORS FOR CO-PRODUCT ALLOCATION

All production of CIDEM Hranice, a.s. represents cement-bonded particleboards of different sizes. The allocation of common inputs and outputs is based on the general allocation rule what represents the proportion of production of every specific product in overall production expressed in a cubic meter.

5.4.2 JUSTIFICATION OF SPECIFIC ALLOCATION PROCESSES (E.G. IF DATA ARE NOT AVAILABLE TO ALLOCATE ACCORDING TO THE EN15804 RULES)

General allocation rule used.

5.4.3 PRESENTATION OF THE ENERGY AND MATERIAL FLOWS AS A RESULT OF DEVIATING ALLOCATION PROCESSES

No declaration of loads and benefits in Module D from the allocation in A1-A3

5.5 A4 TO A5 (OPTIONAL MODULE):

These modules are not covered in this study.

5.6 ACCOUNTING LOSSES IN THE MODULES IN WHICH THEY ARISE

These modules are not covered in this study.

5.7 B1 TO B5 (OPTIONAL MODULE):

These modules are not covered in this study.

5.8 B6 AND B7 (OPTIONAL MODULE):

These modules are not covered in this study.

5.9 C1 TO C4

Module C1 covers estimated energy for deconstruction related to the mass of deconstructed material.

Module C2 covers the transport of material into landfills. Generic DB processes with estimated general distances were used.

Module C3 does not cover any processes of waste processing, because the waste material from the board is landfilled only.

Module C4 covers the processes of waste disposal. Generic DB processes for construction waste were used.

5.10 C3 (OPTIONAL MODULE):

No waste flows are intended to be reused or recovered or used for energy recovery.

5.10.1 EXISTING PURPOSE

There is not any purpose for reused of waste flows.

5.10.2 EXISTING MARKET OR DEMAND

There is not any market for the reuse of waste flows.

5.10.3 COMPLIANCE WITH TECHNICAL REQUIREMENTS AND LEGAL GUIDELINES

No compliance with technical requirements is needed.

5.10.4 FULFILS LIMIT VALUES FOR SUBSTANCES OF VERY HIGH CONCERN (SVHC)

There is no need for fulfilling of limit values.

5.11 C4

Module C4 covers the processes of waste disposal. Generic DB processes for deconstruction waste using excavators were used.

5.12 D - DISPOSAL

All waste flows are disposed of, and so no benefits or loads are considered.

5.13 D - BENEFITS

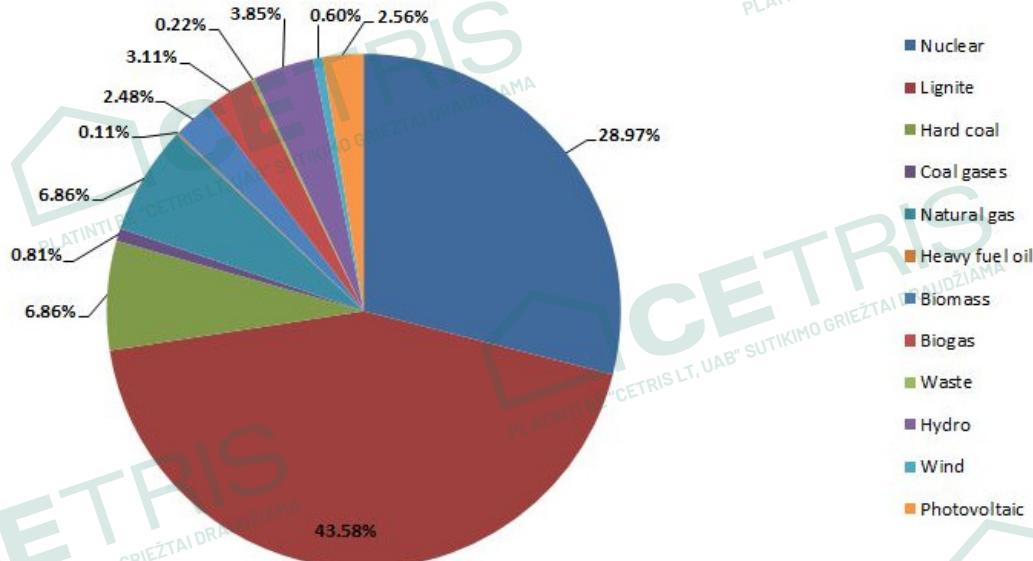
There are no co-products except considered boards, and so no benefits or loads are allocated to them.

6 POWER MIX

6.1 SELECTION OF THE POWER MIX UNDER THE LOCATION OF THE PRODUCTION SITE(S)

Production of electricity spent within CIDEM Hranice, a.s. production was based on the Czech electricity grid mix.

Figure 4 Czech electricity grid mix from GaBi (thinkstep, 2016)



6.2 IF APPLICABLE: VALIDITY OF THE CERTIFICATES FOR GREEN POWER

Not applicable.

7 GREEN ELECTRICITY

Not applicable.

8 CRITERIA FOR EXCLUDING INPUTS AND OUTPUTS

8.1 SELECTION OF THE CUT-OFF CRITERIA, DESCRIPTION OF APPLICATION OF THE CRITERIA, AND ASSUMPTIONS

The cut-off criterion was chosen based on the used PCR. According to the used PCR, more than 95 % of flows were included.

8.2 LIST OF EXCLUDED PROCESSES

There were excluded processes of production of chemical substances (consumption less than 5 kg annually), waste accumulators (production of waste less than 30 kg annually), fluorescent lamps (production of waste less than 51 kg annually).

The exclusion of these flows is in line with the cut off rule. The Summa of excluded substances does not exceed 5% (w/w) of flows.

9 DATA COLLECTION

All data used for this LCA study was collected in CIDEM Hranice, a.s.

Data was collected and provided by:

Ing. Marie Libosvárová, libosvarova@cetris.cz,

The following assumptions were accepted in this LCA study:

1. The density of wooden chips was 310 kg/m³ — this the average density for this material.
2. The area of boards with cuts into them is the same as the area of boards without cuts.
3. Czech energy grid mix for the year 2019 is assumed.

9.1 SELECTION AND USE OF GENERIC DATA AND BACKGROUND DATA

GaBi database and EcoInvent database are used as a source of generic and background data.

The specific data were used for modelling of processes, which can be operated by the producer (manufacturing of products). Also, specific parameters for some generic processes were considered (site-specific distance in transport processes).

Generic data were used for modelling of other processes (production of raw materials, generation of electricity and heat, general transport processes, processes in modules C1-C4).

The geographical scope of the study is the Czech Republic.

The technological scope is from cradle to gate with modules C1-C4 and module D.

Accuracy of data is according to the operating documentation of the manufacturer a no variability is available.

Completeness is reached due to considered flow, which is accounted for according to cut-off rules. There are no missing data. Therefore no data were changed. Only data for C1-C4 were estimated.

The following rules for time scope of data were applied:

< 10 years for background data

< 2 years for manufacturer's data

9.2 DOCUMENTATION ON DATA / BACKGROUND DATA

No missing data. Only cut off application.

10 VALIDITY OF DATA

Data manufacturers are based on the 1-year average (the reference year 2019).

The integrity of generic data records is by thinkstep (GaBi provider) ensured.

Generic data for the Czech Republic were used if they were available. Otherwise, generic data for Europe were used.

11 DEVELOPMENT OF SCENARIOS AT PRODUCT LEVEL IN MODULES A4-A5-B-C-D

Scenarios, which describe modules C1-C4, are based on the most probable alternative. The used cement-bonded particleboard, which is deconstructed, is transported to landfill together with other construction and demolition waste. The waste board is not recyclable, and also it can not be recovered or used for energy recovery. Therefore no waste processing is not considered.

11.1 STATEMENT THAT THE SCENARIOS INCLUDED ARE CURRENTLY IN USE AND ARE REPRESENTATIVE FOR ONE OF THE MOST LIKELY SCENARIO ALTERNATIVES.

The considered scenario for modules C1-C4 is most probable.

11.2 DOCUMENTATION OF THE RELEVANT TECHNICAL INFORMATION

This scenario is modelled using data from generic processes from the GaBi database.

12 ALLOCATIONS

12.1 GENERAL ALLOCATION PRINCIPLES APPLIED

As a general allocation rule, allocation on 1 m³ of the product was chosen. The generation of waste is depended on the weight of the product. Inputs in common (electricity, diesel for manipulation, etc.) and outputs in common (waste generated, emissions) are allocated to every product, i.e. to declared unit of every product.

12.2 PRESENTATION AND JUSTIFICATION OF ALLOCATIONS IN THE USE OF SECONDARY MATERIALS OR SECONDARY FUELS AS RAW MATERIALS

No secondary material and/or fuels used in production. Slag is considered to be a regular material input, and its production is modelled using a generic process.

12.3 PRESENTATION AND JUSTIFICATION OF ALLOCATIONS IN THE PLANT

Only the general allocation rule was used.

12.4 PRESENTATION AND JUSTIFICATION OF ALLOCATION OF MULTI-INPUT PROCESSES

Not applicable.

12.5 CO-PRODUCT ALLOCATION CORRECTLY APPLIED,

No co-product subject of allocation. All production is subject to allocation based on the general allocation rule.

12.6 DOCUMENTATION OF ALLOCATION FACTORS USED AND THEIR (INDEPENDENT) SOURCES

Only previously described general allocation rule was used.

12.7 ALLOCATION PROCESS FOR REUSE, RECYCLING, AND RECOVERY CHECK SPECIFICALLY:

Not applicable.

12.8 IS THERE ANY PRESENTATION OR EXPERT GUESS OF DATASETS WHICH DO NOT COMPLY WITH THE ALLOCATION PRINCIPLES AND DESCRIPTION OF CONSEQUENCES FOR THE LCA RESULTS?

Not applicable.

13 LIFE CYCLE MODELING INFORMATION

13.1 TRANSPARENT PRESENTATION OF LIFE CYCLE ASSESSMENT MODELLING

The following screenshot comes from GaBi 9.5 software.

Figure 5 Screenshot from GaBi software – CETRIS board – basic production A1-A3

1 Cetris 2019 production A1-A3
Project performance summary

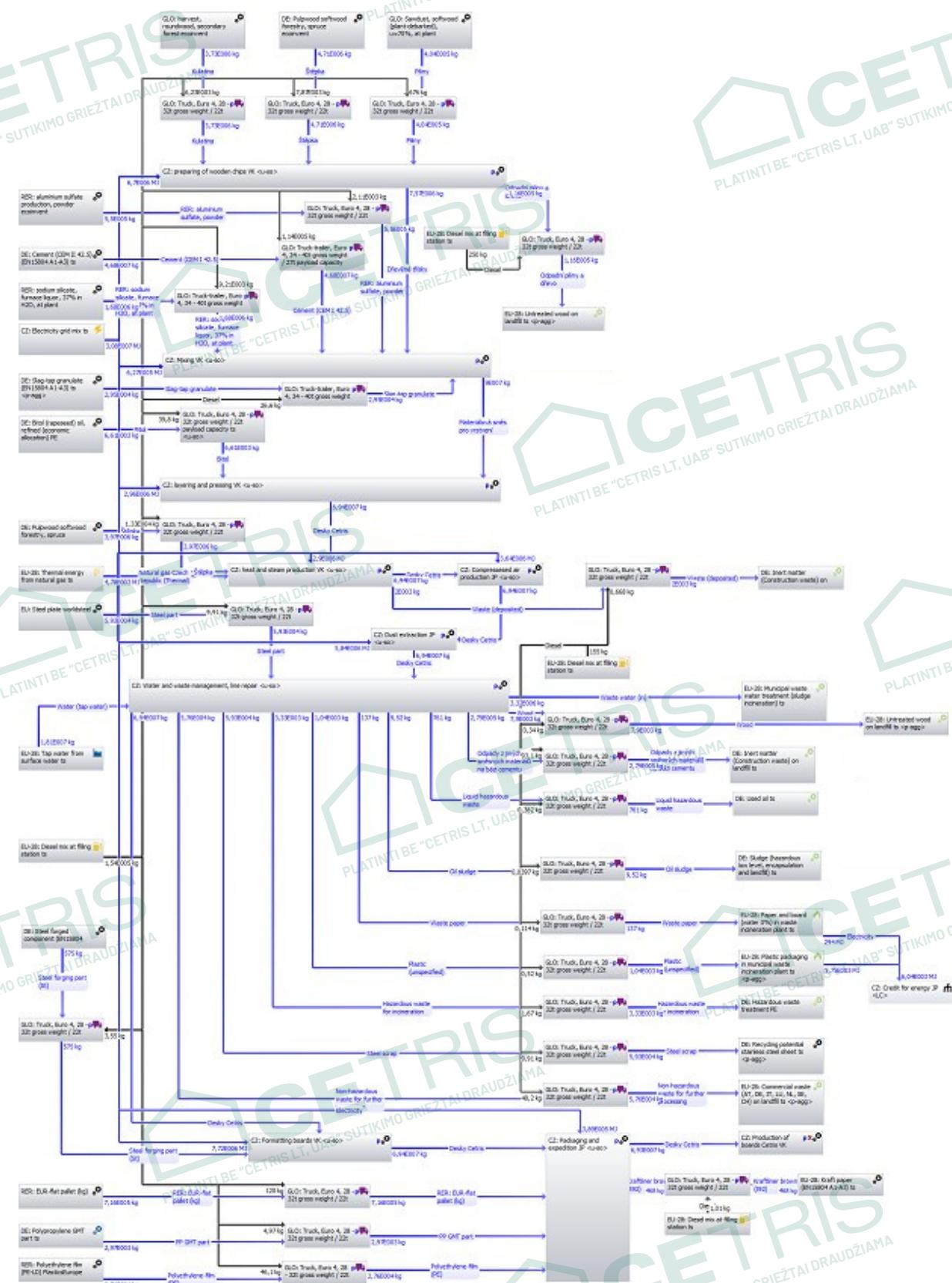


Figure 6 Screenshot from GaBi software – CETRIS - custom made A1-A3

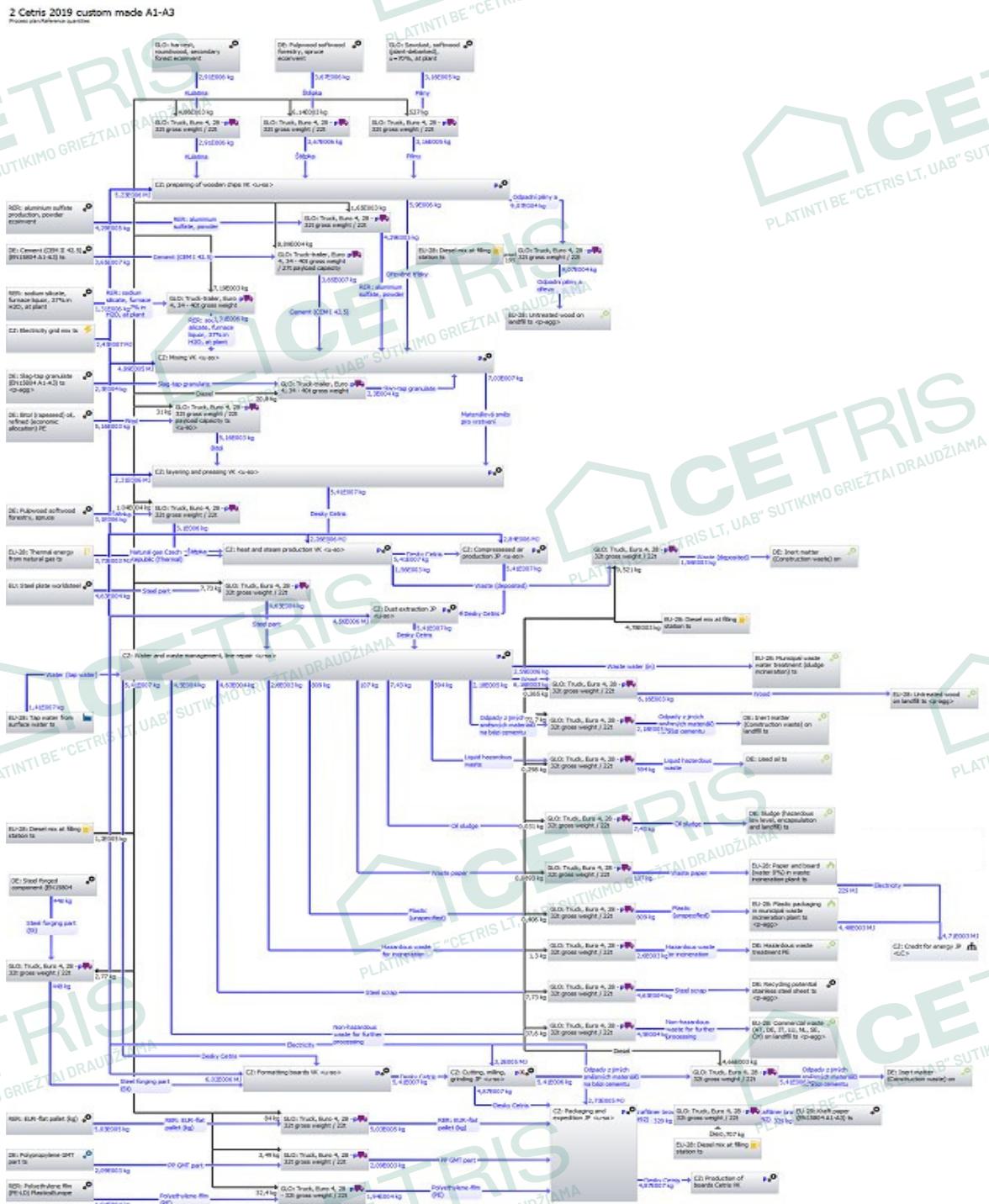


Figure 7 Screenshot from GaBi software – CETRIS – painted, with other services A1-A3

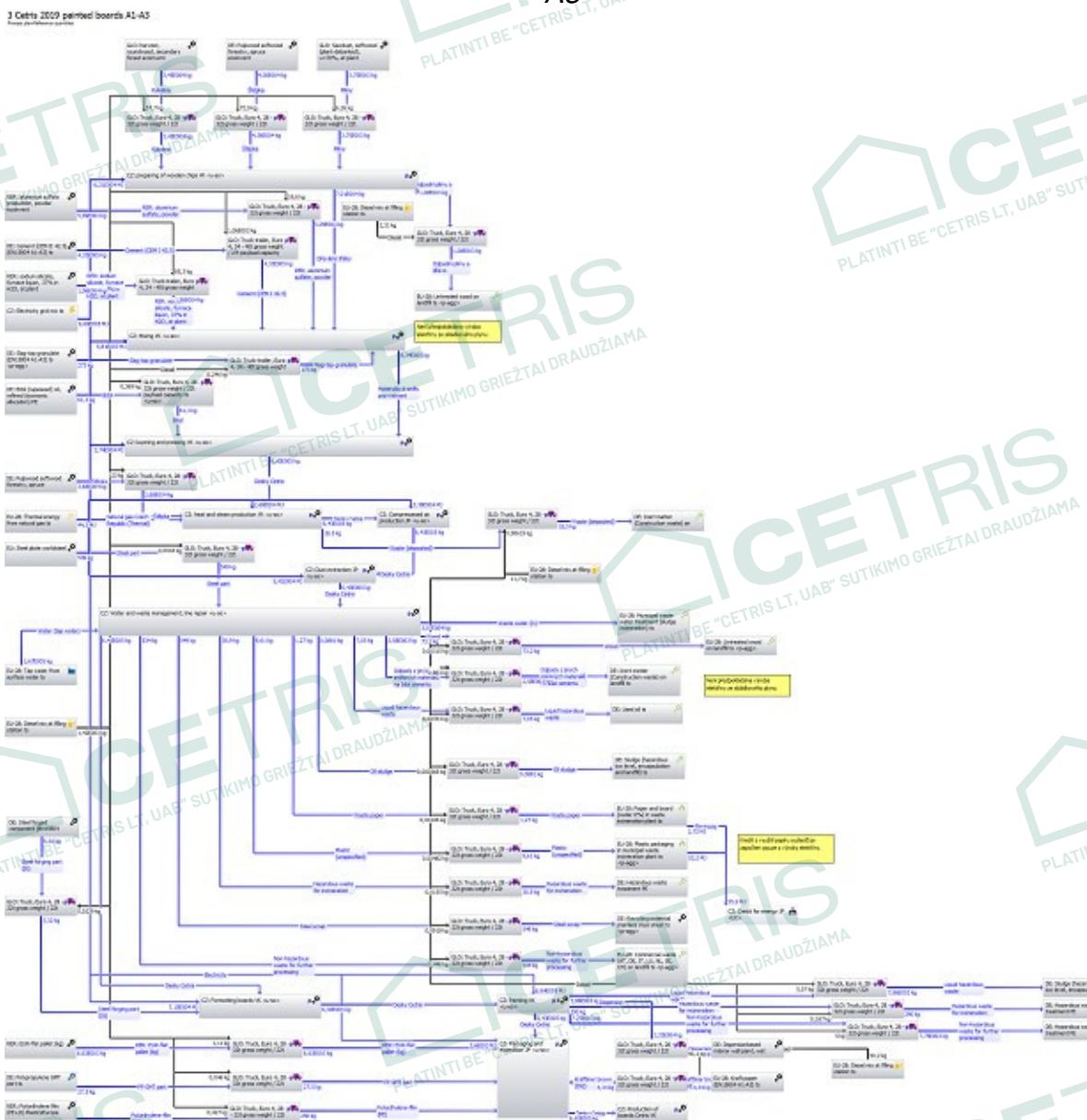


Figure 8 Screenshot from GaBi software – CETRIS – painted, with other services A1-A3

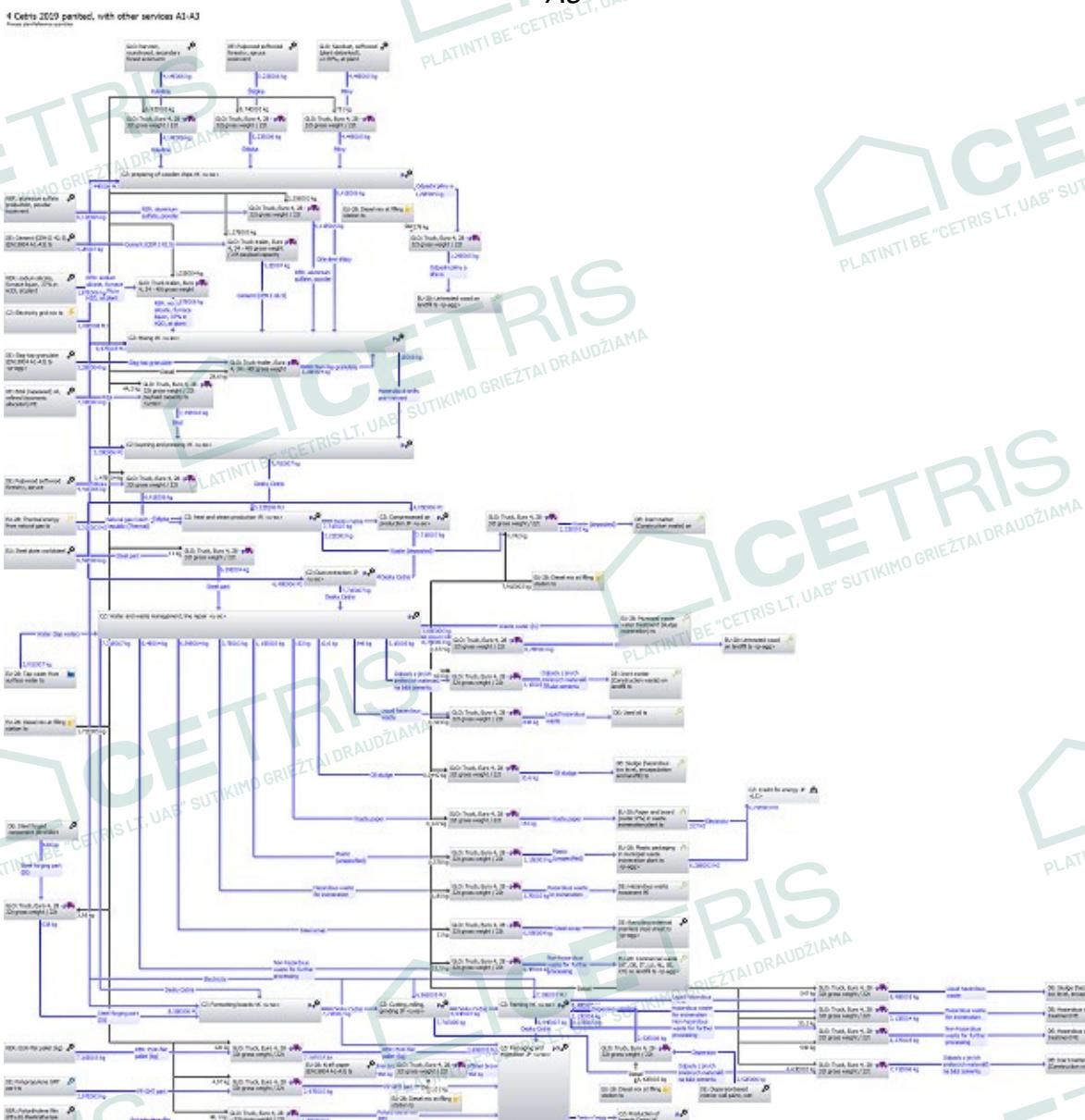




Figure 10 Screenshot from GaBi software – CETRIS – custom made, A1-A3 + C1, C2, C4

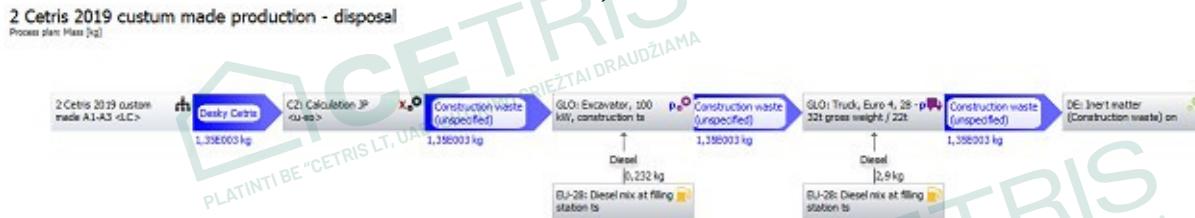
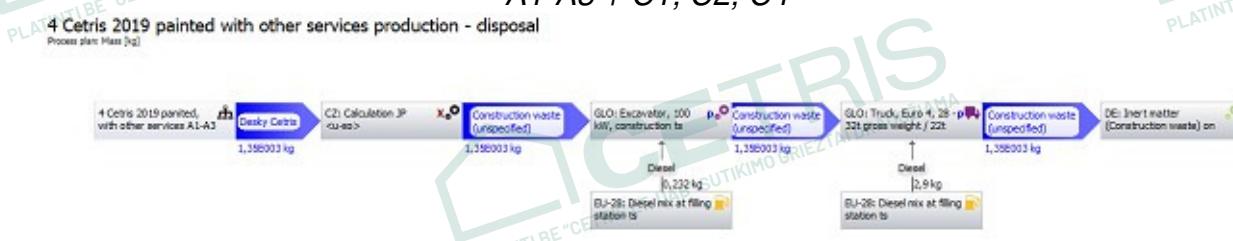


Figure 11 Screenshot from GaBi software – CETRIS – painted A1-A3 + C1, C2, C4



Figure 12 Screenshot from GaBi software – CETRIS – painted, with other services A1-A3 + C1, C2, C4



13.2 CLEAR DESCRIPTION HOW COMPANY DATA ARE USED IN WHICH DATA RECORDS IN LIFE CYCLE ASSESSMENT SOFTWARE PROGRAMS

Generic and specific process data were used for the study. Specific data was obtained directly from the company and was used in relevant production processes. If there was no specific data available, then generic data from the GaBi 9.5 database and Ecoinvent were used in calculations as is summarized below.

The following generic and specific process data were used in calculations:

Generic processes

CZ: Credit for energy

Process for benefits of energy recovery

CZ: Electricity grid mix

Process for Power grid mix (electricity) generation and distribution

DE: Bitol (rapeseed) oil, refined (economic allocation) PE	Process for the production of oil
DE: Cement (CEM II 42.5) (EN15804 A1-A3)	Process for the production of cement
DE: Dispersionbased interior wall paint, wet abrasion resistance 3,	Process for the production of wall paint
DE: Hazardous waste treatment	Removal of hazardous waste
DE: Inert matter (Construction waste) on landfill	Removal of construction waste
DE: Polypropylene GMT part	Process for the production of polypropylene
DE: Pulpwood softwood forestry, spruce	Process for the production of softwood
DE: Recycling potential stainless steel sheet	Process for benefits of recycling of steel
DE: Slag-tap granulate (EN15804 A1-A3)	Process for the production of slag granulate
DE: Sludge (hazardous low level, encapsulation, and landfill)	Removal of sludge
DE: Steel forged component (EN15804 A1-A3)	Process for the production of steel component
DE: Used oil	Removal of used oil
EU: Steel plate world steel	Process for the production of steel component
EU-28: Commercial waste (AT, DE, IT, LU, NL, SE, CH) on landfill	Removal of commercial waste
EU-28: Diesel mix at filling station	Process for the production of diesel
EU-28: Kraft paper (EN15804 A1-A3)	Process for the production of kraft paper
EU-28: Municipal wastewater treatment (sludge incineration)	Process for wastewater treatment
EU-28: Paper and board (water 0%) in a waste incineration plant	Removal of paper by incineration
EU-28: Plastic packaging in a municipal waste incineration plant	Removal of plastic packaging by incineration
EU-28: Tap water from surface water	Process for the production of water
EU-28: Thermal energy from natural gas	Process for the production of thermal energy using the burning of natural gas
EU-28: Untreated wood on landfill	Removal of wood
GLO: harvest, Roundwood, secondary forest	Process for the production of wood

GLO: Sawdust, softwood (plant-debarked), u=70%, at a plant

Process for the production of softwood

GLO: Truck, Euro 4, 28 - 32t gross weight / 22t payload capacity

Transport process

GLO: Truck-trailer, Euro 4, 34 - 40t gross weight / 27t payload capacity

Transport process

RER: aluminum sulfate production, powder ecoinvent

Process for the production of aluminium sulfate

RER: EUR-flat pallet (kg)

Process for the production of EUR pallet

RER: Polyethylene film (PE-LD) PlasticsEurope

Process for the production of polyethylene

RER: sodium silicate, furnace liquor, 37% in H₂O, at a plant

Process for the production of sodium silicate

GLO: Excavator, 100 kW

Process for deconstruction using an excavator

Specific processes

CZ: Compressed air production

Process for the production of compressed air by manufacturer

CZ: Cutting, milling, grinding

Cutting, milling, grinding of boards by manufacturer

CZ: Dust extraction

Process for extraction of dust from air by manufacturer

CZ: Formatting boards

Process for the formatting of boards by manufacturer

CZ: heat and steam production

Process for the production of heat and steam by manufacturer

CZ: layering and pressing

Layering and pressing by manufacturer

CZ: Mixing

Mixing of inputs by manufacturer

CZ: Packaging and expedition

Packaging and expedition by manufacturer

CZ: Painting

Painting by manufacturer

CZ: Preparing of wooden chips

Preparing of wooden chips from wood by manufacturer

CZ: Production of boards Cetris

Process for the production of boards Cetris used for modeling

CZ: Water and waste management, line repair

Process for managing of waste flows

Table 3 Common inputs per the year 2019

Flows Inputs	Amount	Unit
Wood pulp	40 462	m ³
Wood - round	8 706	m ³
Wood - chips	2 656	m ³
Wood pulp - chips	29 100	m ³
Electricity	1956000	kWh
Outputs		
Wood chips	40 462	m ³
Emmission to air PM _{2,5-10}	0.223	t
Waste wood chips	122.1	t

Table 4 Mixing of inputs per the year 2019

Flows Inputs	Amount	Unit
Wood chips	162 092	m ³
Electricity	183000	kWh
Cement CEMII/A-S 42,5R	49 159	t
Aluminum sulfate	578	t
Water, surface	9071	m ³
Water glass, sodium silicate	1770	t
Slag	31	t
Outputs		
Material for layering	94 630	t
Emmission to air PM _{2,5-10}	0.007	t

Table 5 Layering and pressing of inputs per the year 2019

Flows Inputs	Amount	Unit
Material for layering	94 630	t
Layering electricity consump.	468000	kWh

Flows	Amount	Unit
Pressing electricity consump.	61000	kWh
Curing electricity consump.	335000	kWh
Oil	7 680	l
Outputs		
CETRIS boards	54 000	m ³

Table 6 Steam and heat production per the year 2019

Flows	Amount	Unit
Inputs		
Natural gas	159,625	m ³
Wood chips for energy recovery	4172	t
Electricity consump.	845600	kWh
Outputs		
Heat	42052	GJ
Waste ash for incineration	2.1	t

Table 7 Dust extraction per the year 2019

Flows	Amount	Unit
Inputs		
Electricity consump.	1704000	kWh
Outputs		
Emission to air PM _{2,5-10}	8.794	t

Table 8 Water and waste management per the year 2019

Flows	Amount	Unit
Inputs		
Water	18 985	m ³
Outputs		
Wastewater	3 484	m ³
Waste from boards production	292.920	t
Mineral oil, non-chlorinated	0.200	t

Flows	Amount	Unit
Sludge	0.010	t
Waste paper	0.144	t
Waste plastic packaging	1.090	t
Waste absorbent materials	3.5	t
Waste steel	60.736	t
Municipal waste	18.460	t
Steel chips, waste	0.414	t
Non-ferous metals, waste	0.016	t
Waste, bulky	42.120	t
Waste wood, pallets	8.300	t

Table 9 Formatting of boards per the year 2019

Flows	Amount	Unit
Inputs		
CETRIS boards	53 474	m ³
Saw blades	598	kg
Electricity consump.	2231000	kWh
Outputs		
CETRIS boars, formatted	53 474	m ³

Table 10 Cutting, milling, grinding of boards per the year 2019

Flows	Amount	Unit
Inputs		
CETRIS boars, formatted	40 100	m ³
Electricity consump.	89000	kWh
Outputs		
CETRIS boars, formatted, cut	90% of inputs	m ³
Cuts, waste	10% of inputs	m ³

Table 11 Painting of boards per the year 2019

Flows	Amount	Unit
Inputs		
CETRIS boards	476	m ³

Flows	Amount	Unit
Electricity consump.	190000	kWh
Paintings	23.34	t
Výstupy		
CETRIS boards, painted	476	m ³
Waste paintings, solvents	15.9	t

Table 12 Packaging and expedition of boards per the year 2019

Flows	Amount	Unit
Inputs		
CETRIS boards, sold	51 361	m ³
Electricity consump.	108000	kWh
PE (folie, bags)	27.589	t/
PP (folie)	2.973	t
Wood pallets	715.774	t
Kraft board paper	0.468	t
Edges from boards	29.896	t
Outputs		
CETRIS boards - packaged	51 361	m ³

Table 13 Compressed air production, 2019

Flows	Amount	Unit
Inputs		
Electricity consump.	1064000	kWh
Outputs		
Air	Fully consumed	

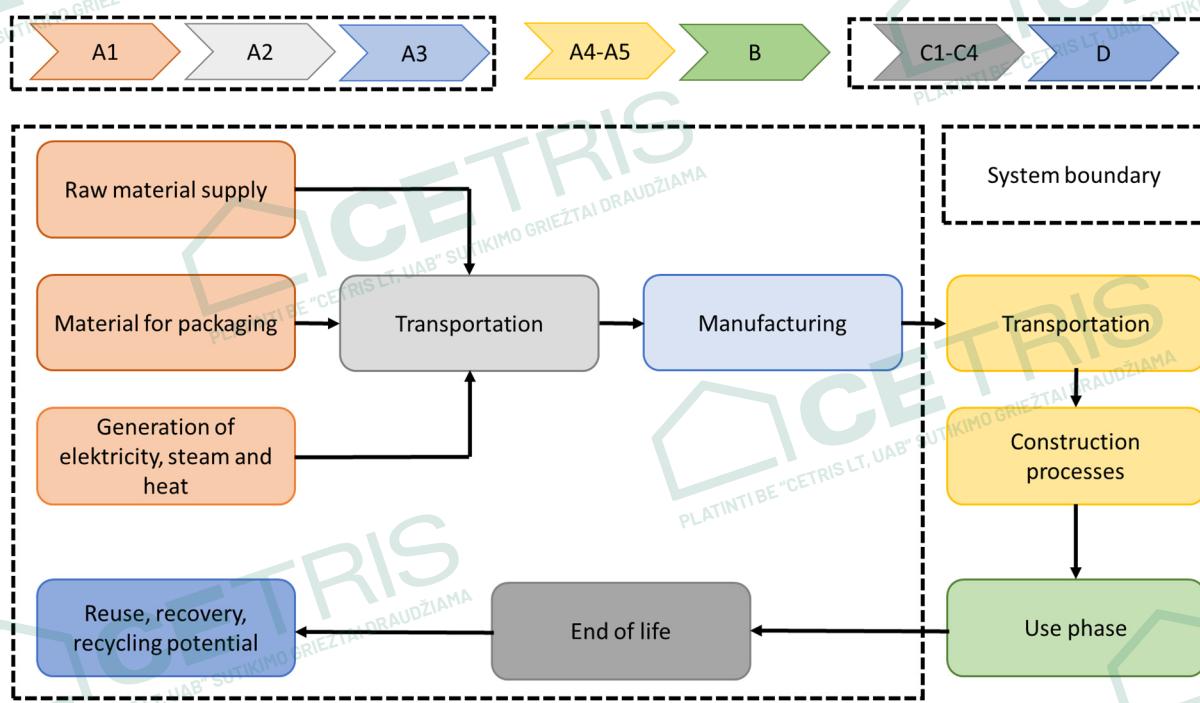
13.3 ASSIGNMENT OF PROCESS DATA TO THE LIFE CYCLE ASSESSMENT MODULES

The LCA study evaluates the life cycle of the product "from cradle do gate with modules C1-C4 and module D". The studied system contains upstream processes as raw material supply (A1) through core processes as transportation (A2) and manufacturing itself (A3). Also, this system includes "End of life" of boards, which includes

deconstruction using excavator (C1), transport (C2), and disposal (C4). Any flow is not recovered or reused, and so module D does not include any processes.

The following diagram illustrates the product system studied. The product system is divided into product stage (A1-A3), Use stage (B), and End of Life stage (C).

Figure 13 System boundary (cradle to gate with modules C1-C4 and module D)



13.4 FOR SEVERAL LOCATIONS/PRODUCTS:

Production only from one location is the subject of this study.

13.5 PLAUSIBILITY AND CONSISTENCY OF DATA AND RESULTS OF INVENTORY ANALYSIS

The input data were gained from continuous records of evidence from the central register of the producer. The results of inventory analysis is a summarization of elementary flows - the inputs from the environment and emissions of substances that are emitted into the environment during the product's lifecycle. The following table provides data on raw material consumption and data showing the amounts of released emissions within the product's life cycle concerning the selected declared unit. Negative values mean savings of the elementary flows due to e.g. recycling.

In the following table, there is shown the inventory analysis data of CETRIS boards.

Table 14 Results of inventarization for CETRIS boards (m³)

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
Flows	8.57E+05	9.55E+05	1.80E+06	1.89E+06	Inorganic emissions to fresh water	6.95E+00	7.71E+00	1.38E+01	1.45E+01
Resources	4.61E+05	5.13E+05	9.15E+05	9.67E+05	Acid (calculated as H+)	1.13E-05	1.22E-05	1.73E-05	1.81E-05
Energy resources	7.81E+02	8.69E+02	1.01E+03	1.10E+03	Aluminium	3.02E-02	3.32E-02	3.17E-02	3.48E-02
Non renewable energy resources	1.85E+02	2.07E+02	4.14E+02	4.35E+02	Ammonia	3.55E-04	3.98E-04	1.10E-03	1.14E-03
Crude oil (resource)	2.72E+01	2.98E+01	3.83E+01	4.09E+01	Ammonium (total N)	1.29E-11	1.43E-11	3.74E-11	3.89E-11
Hard coal (resource)	3.47E+01	3.87E+01	6.65E+01	7.04E+01	Ammonium / ammonia	1.43E-03	1.59E-03	3.76E-03	3.92E-03
Lignite (resource)	1.13E+02	1.26E+02	2.79E+02	2.93E+02	Barium	8.79E-04	9.71E-04	1.03E-03	1.12E-03
Natural gas (resource)	1.05E+01	1.16E+01	2.95E+01	3.07E+01	Beryllium	1.26E-07	1.40E-07	1.86E-07	1.99E-07
Peat (resource)	2.58E-02	2.86E-02	3.84E-02	4.12E-02	Borate	4.76E-07	5.29E-07	4.76E-07	5.29E-07
Uranium (resource)	1.35E-03	1.50E-03	3.56E-03	3.72E-03	Boron	9.38E-04	1.05E-03	2.01E-03	2.12E-03
Renewable energy resources	5.96E+02	6.62E+02	5.96E+02	6.62E+02	Bromate	1.75E-05	1.93E-05	1.75E-05	1.93E-05
Material resources	4.61E+05	5.13E+05	9.14E+05	9.66E+05	Bromide	3.37E-05	3.75E-05	3.37E-05	3.75E-05
Non renewable elements	6.06E+00	6.71E+00	1.49E+01	1.55E+01	Bromine	4.67E-04	5.16E-04	4.67E-04	5.16E-04
Aluminium	1.91E+00	2.12E+00	1.91E+00	2.12E+00	Calcium	8.32E-01	9.21E-01	1.34E+00	1.43E+00
Antimony	2.47E-06	2.72E-06	3.86E-06	4.11E-06	Carbon disulphide	8.51E-08	9.50E-08	1.61E-07	1.71E-07
Argon	5.12E-04	5.69E-04	5.12E-04	5.69E-04	Carbonate	2.48E-02	2.72E-02	3.39E-02	3.63E-02
Arsenic	3.99E-13	4.37E-13	4.56E-13	4.94E-13	Cesium	4.10E-07	4.53E-07	4.10E-07	4.53E-07
Bromine	3.73E-05	4.14E-05	3.73E-05	4.14E-05	Cyanide	2.07E-05	2.29E-05	3.55E-05	3.77E-05
Cadmium	2.18E-04	2.42E-04	2.24E-04	2.48E-04	Dichromate	1.10E-07	1.20E-07	1.10E-07	1.20E-07
Calcium	3.22E-07	3.57E-07	6.01E-07	6.36E-07	Elemental carbon	2.44E-08	2.71E-08	2.44E-08	2.71E-08
Cerium	2.28E-11	2.53E-11	3.72E-11	3.98E-11	Fluoride	2.45E-01	2.75E-01	6.96E-01	7.26E-01
Cobalt	2.65E-07	2.91E-07	1.69E-06	1.71E-06	Fluorine	1.33E-07	1.47E-07	2.83E-07	2.97E-07
Copper	6.06E-02	6.73E-02	7.11E-02	7.77E-02	Hexaflourosilicates	2.28E-06	2.52E-06	2.28E-06	2.52E-06
Dysprosium	3.40E-14	3.78E-14	6.36E-14	6.73E-14	Hydrazine (N2H4)	2.74E-13	3.04E-13	3.63E-13	3.93E-13
Erbium	1.02E-14	1.13E-14	1.91E-14	2.02E-14	Hydrogen cyanide (prussic acid)	2.47E-13	2.76E-13	2.06E-10	2.06E-10
Europium	8.69E-14	9.66E-14	1.49E-13	1.59E-13	Hydrogen fluoride (hydrofluoric acid)	6.44E-05	7.15E-05	6.76E-05	7.47E-05
Fluorine	7.90E-04	8.76E-04	7.90E-04	8.76E-04	Hydrogen chloride	2.69E-05	2.99E-05	2.68E-01	2.68E-01

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
Gadolinium	1.74E-13	1.93E-13	2.91E-13	3.11E-13	Hydrogen peroxide	2.39E-04	2.67E-04	4.59E-04	4.86E-04
Gallium	5.80E-04	6.45E-04	5.80E-04	6.45E-04	Hydrogen sulphide	8.53E-07	9.31E-07	8.53E-07	9.31E-07
Gold	3.45E-06	3.83E-06	3.64E-06	4.01E-06	Hydroxide	4.12E-06	4.58E-06	4.43E-06	4.88E-06
Holmium	6.81E-14	7.57E-14	1.27E-13	1.35E-13	Hypochlorite	3.10E-06	3.40E-06	3.10E-06	3.40E-06
Chromium	-3.78E-01	-4.20E-01	-3.76E-01	-4.18E-01	Chlorate	1.37E-04	1.51E-04	1.37E-04	1.51E-04
Indium	3.62E-06	4.02E-06	3.62E-06	4.02E-06	Chloride	4.36E+00	4.83E+00	8.12E+00	8.59E+00
Iodine	8.70E-06	9.66E-06	8.70E-06	9.66E-06	Chlorine	1.46E-06	1.62E-06	1.47E-06	1.63E-06
Iridium	8.54E-11	9.51E-11	2.71E-09	2.72E-09	Chlorine (dissolved)	1.15E-03	1.29E-03	3.28E-03	3.42E-03
Iron	7.18E+00	7.96E+00	1.59E+01	1.66E+01	Inorganic dissolved matter (unspecified)	5.16E-17	5.73E-17	6.27E-15	6.27E-15
Krypton	5.37E-15	5.97E-15	5.37E-15	5.97E-15	Inorganic salts and acids (unspecified)	1.08E-19	1.21E-19	2.31E-19	2.43E-19
Lanthanum	1.84E-12	2.04E-12	1.84E-12	2.04E-12	Iodide	4.70E-05	5.20E-05	4.70E-05	5.20E-05
Lead	4.91E-03	5.44E-03	6.02E-03	6.56E-03	Lithium	5.05E-04	5.61E-04	5.05E-04	5.61E-04
Lithium	4.87E-07	5.42E-07	4.87E-07	5.42E-07	Magnesium	1.56E-01	1.72E-01	1.88E-01	2.04E-01
Lutetium	6.81E-16	7.57E-16	1.27E-15	1.35E-15	Magnesium chloride	1.01E-06	1.13E-06	2.03E-06	2.15E-06
Magnesium	-1.34E+00	-1.49E+00	-1.34E+00	-1.49E+00	Metal ions (unspecific)	1.99E-06	2.22E-06	2.28E-05	2.31E-05
Manganese	2.23E-02	2.46E-02	9.81E-02	1.00E-01	Neutral salts	0.00E+00	0.00E+00	8.78E-10	8.78E-10
Mercury	1.06E-09	1.06E-09	1.06E-09	1.06E-09	Nitrate	7.55E-02	8.40E-02	1.31E-01	1.39E-01
Molybdenum	1.64E-03	1.82E-03	1.73E-03	1.90E-03	Nitric acid	7.63E-22	8.48E-22	1.43E-21	1.51E-21
Neodymium	6.79E-12	7.55E-12	1.18E-11	1.26E-11	Nitrite	2.30E-05	2.55E-05	2.31E-05	2.57E-05
Nickel	8.67E-03	8.60E-03	8.78E-03	8.71E-03	Nitrogen	1.08E-03	1.20E-03	1.17E-03	1.28E-03
Osmium	1.04E-10	1.16E-10	3.31E-09	3.32E-09	Nitrogen (as total N)	3.01E-06	3.37E-06	8.60E-06	8.97E-06
Palladium	1.49E-07	1.65E-07	1.96E-07	2.12E-07	Nitrogen organic bound	8.15E-03	9.07E-03	1.58E-02	1.67E-02
Phosphorus	7.68E-03	8.51E-03	2.56E-02	2.65E-02	Nitrogen oxides	8.13E-10	9.07E-10	1.59E-09	1.68E-09
Platinum	2.16E-08	2.40E-08	1.00E-07	1.03E-07	Phosphate	1.23E-02	1.36E-02	1.41E-02	1.54E-02
Praseodymium	1.97E-12	2.19E-12	3.59E-12	3.81E-12	Phosphorus	5.56E-04	6.17E-04	8.03E-04	8.65E-04
Rhenium	3.58E-09	3.97E-09	3.58E-09	3.97E-09	Potassium	3.54E-02	3.93E-02	3.55E-02	3.94E-02
Rhodium	1.81E-09	2.00E-09	9.83E-09	1.00E-08	Rubidium	4.88E-06	5.40E-06	4.88E-06	5.40E-06

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
Ruthenium	5.06E-10	5.63E-10	1.60E-08	1.61E-08	Silicate particles	4.07E-08	4.54E-08	8.19E-08	8.67E-08
Samarium	4.84E-13	5.38E-13	8.38E-13	8.91E-13	Silicon	6.50E-04	7.22E-04	6.50E-04	7.22E-04
Silicon	-1.48E+00	-1.64E+00	-1.48E+00	-1.64E+00	Sodium	3.95E-01	4.40E-01	1.13E+00	1.18E+00
Silver	1.78E-05	1.98E-05	2.09E-05	2.29E-05	Sodium hypochlorite	1.74E-04	1.93E-04	6.94E-04	7.13E-04
Strontium	1.25E-10	1.39E-10	2.33E-10	2.47E-10	Sodium chloride (rock salt)	8.74E-05	9.75E-05	1.74E-04	1.84E-04
Sulphur	3.38E-02	3.77E-02	7.06E-02	7.45E-02	Sodium sulphate	5.72E-03	6.38E-03	1.10E-02	1.16E-02
Tantalum	4.42E-06	4.91E-06	1.89E-04	1.90E-04	Strontium	9.80E-04	1.09E-03	1.15E-03	1.26E-03
Tellurium	3.96E-07	4.39E-07	3.96E-07	4.39E-07	Sulfate	7.52E-01	8.40E-01	1.71E+00	1.80E+00
Thulium	3.40E-16	3.78E-16	6.36E-16	6.73E-16	Sulphide	4.44E-03	4.88E-03	6.16E-03	6.59E-03
Tin	1.49E-04	1.66E-04	1.49E-04	1.66E-04	Sulphite	2.10E-04	2.34E-04	5.33E-04	5.58E-04
Titanium	5.62E-06	6.28E-06	1.18E-05	1.24E-05	Sulphur	2.24E-04	2.49E-04	2.24E-04	2.49E-04
Vanadium	8.48E-05	9.43E-05	9.40E-05	1.03E-04	Sulphur trioxide	2.06E-06	2.30E-06	3.94E-06	4.18E-06
Xenon	6.30E-16	7.00E-16	6.30E-16	7.00E-16	Sulphuric acid	1.18E-06	1.32E-06	2.35E-06	2.49E-06
Ytterbium	6.81E-16	7.57E-16	1.27E-15	1.35E-15	Urea	6.63E-09	7.36E-09	6.63E-09	7.36E-09
Yttrium	9.14E-14	1.02E-13	1.71E-13	1.81E-13	Organic emissions to fresh water	1.63E-01	1.80E-01	2.83E-01	3.01E-01
Zinc	2.15E-02	2.38E-02	2.25E-02	2.48E-02	Halogenated organic emissions to fresh water	1.30E-05	1.44E-05	1.30E-05	1.44E-05
Zirconium	5.72E-05	6.36E-05	5.72E-05	6.36E-05	1,1,1-Trichloroethane	2.07E-18	2.30E-18	2.07E-18	2.30E-18
Non renewable resources	3.54E+03	3.95E+03	6.05E+03	6.45E+03	1,2-Dibromoethane	-3.42E-18	-3.80E-18	1.22E-14	1.22E-14
Anhydrite (Rock)	1.44E-07	1.60E-07	1.44E-07	1.60E-07	2-Chlorotoluene	2.33E-08	2.59E-08	2.33E-08	2.59E-08
Antimonite	1.31E-10	1.42E-10	1.31E-10	1.42E-10	Dichlorobenzene (o-DCB; 1,2-dichlorobenzene)	1.35E-06	1.50E-06	1.35E-06	1.50E-06
Antimony - gold - ore (0.09%)	0.00E+00	0.00E+00	8.31E-17	8.31E-17	Dichloroethane (ethylene dichloride)	1.54E-07	1.71E-07	1.54E-07	1.71E-07
Barite, 15% in crude ore, in ground	2.13E-02	2.37E-02	2.13E-02	2.37E-02	Dichloromethane (methylene chloride)	6.69E-06	7.40E-06	6.69E-06	7.40E-06
Barium sulphate	2.41E-02	2.66E-02	2.41E-02	2.66E-02	Dichloropropane	-2.63E-21	-2.87E-21	2.15E-17	2.15E-17
Basalt	1.56E-02	1.71E-02	1.56E-02	1.72E-02	Chlorinated hydrocarbons (unspecified)	8.21E-14	9.16E-14	1.75E-13	1.85E-13
Bauxite	1.93E+00	2.15E+00	5.20E+00	5.41E+00	Chlorobenzene	4.67E-06	5.18E-06	4.67E-06	5.18E-06
Bentonit clay	5.37E-03	5.97E-03	5.37E-03	5.97E-03	Chloromethane (methyl chloride)	-9.12E-12	-1.01E-11	1.51E-09	1.51E-09
Bentonite	7.81E-01	8.67E-01	8.56E-01	9.42E-01	Chlorous dissolvent	5.99E-08	6.60E-08	5.99E-08	6.60E-08

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
Borax	1.87E-06	2.07E-06	1.91E-06	2.11E-06	Pentachlorophenol (PCP)	1.66E-10	1.85E-10	3.48E-10	3.67E-10
Cadmium ore	5.09E-06	5.53E-06	5.09E-06	5.53E-06	Polychlorinated biphenyls (PCB unspecified)	1.61E-14	1.79E-14	1.61E-14	1.79E-14
Calcite, in ground	4.87E-01	5.41E-01	4.87E-01	5.41E-01	Polychlorinated dibenzo-p-dioxins (2,3,7,8 - TCDD)	4.82E-13	4.82E-13	4.82E-13	4.82E-13
Calcium chloride	6.73E-12	7.49E-12	5.98E-11	6.05E-11	Tetrachloroethene (perchloroethylene)	2.21E-12	2.46E-12	4.63E-12	4.88E-12
Carbon, in organic matter, in soil	4.42E+01	4.91E+01	4.42E+01	4.91E+01	Trichloromethane (chloroform)	9.80E-09	1.09E-08	9.80E-09	1.09E-08
Carnallite	1.70E-04	1.89E-04	1.70E-04	1.89E-04	Vinyl chloride (VCM; chloroethene)	1.58E-08	1.75E-08	1.65E-08	1.82E-08
Cinnabar	1.33E-07	1.46E-07	1.33E-07	1.46E-07	Hydrocarbons to fresh water	3.70E-02	4.06E-02	3.97E-02	4.33E-02
Clay	9.15E+01	1.02E+02	9.55E+01	1.06E+02	2-Methyl-2-butene	3.82E-12	4.24E-12	3.82E-12	4.24E-12
Colemanite ore	3.53E-03	3.63E-03	1.33E-02	1.34E-02	Acenaphthene	6.56E-08	7.20E-08	9.01E-08	9.65E-08
Copper - Gold - Silver - ore (1.0% Cu; 0.4 g/t Au; 66 g/t Ag)	0.00E+00	0.00E+00	4.74E-08	4.74E-08	Acenaphthylene	2.72E-08	2.99E-08	3.77E-08	4.04E-08
Copper - Gold - Silver - ore (1.1% Cu; 0.01 g/t Au; 2.86 g/t Ag)	0.00E+00	0.00E+00	2.89E-08	2.89E-08	Acetic acid	7.24E-06	8.03E-06	8.64E-06	9.43E-06
Copper - Gold - Silver - ore (1.16% Cu; 0.002 g/t Au; 1.06 g/t Ag)	0.00E+00	0.00E+00	1.63E-08	1.63E-08	Acetonitrile	4.67E-09	5.19E-09	4.67E-09	5.19E-09
Copper - Molybdenum - Gold - Silver - ore (1.13% Cu; 0.02% Mo; 0.01 g/t Au; 2.86 g/t Ag)	0.00E+00	0.00E+00	3.97E-08	3.97E-08	Acrylonitrile	-1.86E-13	-2.06E-13	1.38E-12	1.36E-12
Copper ore (0.14%)	0.00E+00	0.00E+00	3.39E-06	3.39E-06	Alkane (unspecified)	5.32E-05	5.89E-05	5.32E-05	5.89E-05
Copper ore (1.2%)	0.00E+00	0.00E+00	4.91E-09	4.91E-09	Alkene (unspecified)	4.93E-06	5.46E-06	4.93E-06	5.46E-06
Copper ore (4%)	0.00E+00	0.00E+00	1.19E-17	1.19E-17	Aniline	5.37E-08	5.97E-08	5.37E-08	5.97E-08
Copper ore (sulphidic, 1.1%)	0.00E+00	0.00E+00	1.41E-14	1.41E-14	Anthracene	1.18E-07	1.29E-07	1.64E-07	1.75E-07
Diatomite	2.62E-09	2.88E-09	2.62E-09	2.88E-09	Aromatic hydrocarbons (unspecified)	2.16E-04	2.39E-04	2.18E-04	2.41E-04
Dolomite	1.83E-01	2.03E-01	2.69E-01	2.90E-01	Benzene	1.78E-03	1.80E-03	1.84E-03	1.86E-03
Feldspar (aluminium silicates)	2.25E-08	2.50E-08	2.25E-08	2.50E-08	Benzo{a}anthracene	7.22E-09	7.93E-09	1.00E-08	1.07E-08
Ferro manganese	1.29E-06	1.29E-06	1.29E-06	1.29E-06	Benzofluoranthene	8.80E-10	9.67E-10	1.22E-09	1.31E-09
Fluorspar (calcium fluoride; fluorite)	7.30E-03	8.08E-03	1.12E-02	1.20E-02	Butene	1.66E-07	1.84E-07	1.66E-07	1.84E-07
Granite	1.52E-10	1.69E-10	1.52E-10	1.69E-10	Butylene glycol (butane diol)	2.91E-08	3.23E-08	2.91E-08	3.23E-08
Graphite	1.08E-07	1.20E-07	1.68E-07	1.80E-07	Butyrolactone	7.43E-10	8.24E-10	7.43E-10	8.24E-10
Gravel	9.02E+01	1.00E+02	9.02E+01	1.00E+02	Cresol (methyl phenol)	7.29E-15	8.14E-15	4.00E-13	4.01E-13

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
Gypsum (natural gypsum)	3.37E+01	3.75E+01	3.46E+01	3.83E+01	Ethanol	2.26E-06	2.51E-06	2.26E-06	2.51E-06
Heavy spar (BaSO4)	1.09E-05	1.21E-05	1.51E-04	1.52E-04	Ethene (ethylene)	1.11E-05	1.23E-05	1.11E-05	1.23E-05
Chromium ore (39%)	0.00E+00	0.00E+00	9.10E-08	9.10E-08	Ethyl benzene	1.78E-05	1.96E-05	2.08E-05	2.26E-05
Chrysotile	5.41E-06	5.99E-06	5.41E-06	5.99E-06	Ethylene acetate (ethyl acetate)	2.33E-08	2.59E-08	2.33E-08	2.59E-08
Ilmenite (titanium ore)	2.85E-02	3.16E-02	3.54E+00	3.55E+00	Ethylene oxide	9.64E-08	1.07E-07	9.64E-08	1.07E-07
Inert rock	1.68E+03	1.87E+03	4.06E+03	4.26E+03	Fatty acids (calculated as total carbon)	6.14E-04	6.76E-04	6.14E-04	6.76E-04
Iron ore (56.86%)	0.00E+00	0.00E+00	1.19E-04	1.19E-04	Fluoranthene	8.20E-09	9.01E-09	1.15E-08	1.23E-08
Iron ore (65%)	0.00E+00	0.00E+00	3.19E-06	3.19E-06	Formaldehyde (methanal)	1.12E-04	1.13E-04	1.12E-04	1.13E-04
Kaolin ore	7.39E-05	8.22E-05	5.33E+00	5.33E+00	Hexane (isomers)	7.97E-16	8.90E-16	4.39E-14	4.40E-14
Kaolinite (24% in ore as mined)	2.26E-04	2.50E-04	2.26E-04	2.50E-04	Hydrocarbons (unspecified)	3.46E-05	3.71E-05	6.03E-05	6.28E-05
Kieserite (25% in ore as mined)	1.69E-05	1.88E-05	1.69E-05	1.88E-05	Chrysene	2.64E-08	2.90E-08	3.67E-08	3.93E-08
Lead - Zinc - Silver - ore (5.49% Pb; 12.15% Zn; 57.4 gpt Ag)	0.00E+00	0.00E+00	7.91E-09	7.91E-09	Methanol	4.23E-04	4.71E-04	1.06E-03	1.11E-03
Lead - zinc ore (4.6%-0.6%)	0.00E+00	0.00E+00	5.38E-06	5.38E-06	Methyl tert-butylether	3.62E-07	4.01E-07	3.62E-07	4.01E-07
Limestone (calcium carbonate)	1.25E+03	1.39E+03	1.32E+03	1.46E+03	Naphthalene	4.55E-06	5.00E-06	6.31E-06	6.76E-06
Magnesit (Magnesium carbonate)	1.19E-02	1.29E-02	1.50E-02	1.61E-02	Oil (unspecified)	3.17E-02	3.50E-02	3.35E-02	3.69E-02
Magnesite	2.11E-03	2.34E-03	2.11E-03	2.34E-03	Phenol (hydroxy benzene)	8.31E-04	8.49E-04	8.96E-04	9.14E-04
Magnesium chloride leach (40%)	6.67E-02	7.42E-02	2.56E+00	2.57E+00	Polycyclic aromatic hydrocarbon (carcinogen)	2.27E-11	2.52E-11	2.35E-11	2.60E-11
Manganese ore	-2.63E-10	-2.92E-10	1.50E-08	1.50E-08	Polycyclic aromatic hydrocarbons (PAH, unspec.)	2.31E-06	2.55E-06	2.34E-06	2.57E-06
Manganese ore (R.O.M.)	0.00E+00	0.00E+00	1.35E-07	1.35E-07	Propanol	1.38E-08	1.54E-08	1.38E-08	1.54E-08
Metamorphic stone, containing graphite	6.91E-05	7.64E-05	6.91E-05	7.64E-05	Propanol (iso-propanol; isopropanol)	1.32E-08	1.46E-08	1.32E-08	1.46E-08
Molybdenite (Mo 0.24%)	0.00E+00	0.00E+00	2.42E-08	2.42E-08	Propene	8.67E-04	8.68E-04	8.67E-04	8.68E-04
Natural Aggregate	1.29E+02	1.43E+02	1.32E+02	1.46E+02	Propylene oxide	2.71E-06	3.00E-06	2.71E-06	3.00E-06
Natural pumice	2.79E+01	3.10E+01	2.79E+01	3.10E+01	Sodium formate	1.13E-07	1.25E-07	1.13E-07	1.25E-07
Nickel ore (1.5%)	0.00E+00	0.00E+00	4.94E-10	4.94E-10	Toluene (methyl benzene)	1.36E-04	1.49E-04	1.70E-04	1.83E-04
Nickel ore (1.6%)	0.00E+00	0.00E+00	4.96E-07	4.96E-07	Triethylene glycol	3.47E-08	3.85E-08	3.47E-08	3.85E-08
Olivine	1.49E-05	1.49E-05	1.49E-05	1.49E-05	VOC (unspecified)	1.45E-04	1.60E-04	1.45E-04	1.60E-04

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
Peat ecoinvent	2.73E-03	3.02E-03	2.73E-03	3.02E-03	Xylene (isomers; dimethyl benzene)	7.06E-05	7.78E-05	8.28E-05	9.00E-05
Perlite (Rhyolithe)	9.56E-08	1.06E-07	9.56E-08	1.06E-07	Xylene (meta-Xylene; 1,3-Dimethylbenzene)	1.85E-08	2.05E-08	1.85E-08	2.05E-08
Phonolite	1.74E-06	1.93E-06	2.65E-06	2.84E-06	Xylene (ortho-Xylene; 1,2-Dimethylbenzene)	1.04E-08	1.15E-08	1.04E-08	1.15E-08
Phosphate ore	9.12E-01	1.02E+00	1.82E+00	1.92E+00	1-Butanol	3.67E-07	4.07E-07	3.67E-07	4.07E-07
Phosphorus minerals	0.00E+00	0.00E+00	2.69E-11	2.69E-11	1-Pentanol	3.57E-09	3.97E-09	3.57E-09	3.97E-09
Phosphorus ore (29% P2O5)	0.00E+00	0.00E+00	1.46E-11	1.46E-11	1-Pentene	2.70E-09	3.00E-09	2.70E-09	3.00E-09
Potashsalt, crude (hard salt, 10% K2O)	1.54E+00	1.71E+00	2.76E+00	2.92E+00	2-Aminopropanol	3.93E-09	4.37E-09	3.93E-09	4.37E-09
Potassium chloride	1.10E-07	1.10E-07	1.12E-07	1.12E-07	Acetaldehyde (Ethanal)	1.39E-06	1.54E-06	1.39E-06	1.54E-06
Precious metal ore (R.O.M.)	0.00E+00	0.00E+00	7.38E-09	7.38E-09	Acetone (dimethyl ketone)	3.80E-08	4.16E-08	3.80E-08	4.16E-08
Pyrite	7.01E-04	7.78E-04	7.18E-04	7.96E-04	Acetyl chloride	2.81E-09	3.12E-09	2.81E-09	3.12E-09
Quartz sand (silica sand; silicon dioxide)	4.58E+01	5.09E+01	5.08E+01	5.59E+01	Acrylic acid	2.39E-10	2.66E-10	2.39E-10	2.66E-10
Rutile (titanium ore)	2.94E-09	2.94E-09	2.94E-09	2.94E-09	Allyl chloride	9.64E-09	1.07E-08	9.64E-09	1.07E-08
Sand	1.75E-04	1.82E-04	1.06E-03	1.06E-03	Biphenyl	1.09E-22	1.21E-22	2.03E-22	2.15E-22
Shale	1.31E-03	1.46E-03	2.63E-03	2.78E-03	Butanediol	9.61E-10	1.07E-09	1.88E-09	1.99E-09
Slate	2.17E-05	2.19E-05	2.17E-05	2.19E-05	Carbon, organically bound	1.22E-01	1.35E-01	2.39E-01	2.52E-01
Sodium carbonate (soda)	2.41E-17	2.41E-17	2.41E-17	2.41E-17	Carboxylic acids, unspecified	8.93E-04	9.92E-04	8.93E-04	9.92E-04
Sodium chloride (rock salt)	7.14E+00	7.93E+00	1.30E+01	1.38E+01	Cumene (isopropylbenzene)	2.34E-03	2.35E-03	2.34E-03	2.35E-03
Sodium nitrate	5.20E-09	5.21E-09	5.20E-09	5.21E-09	Diethylamine	2.53E-08	2.81E-08	2.53E-08	2.81E-08
Sodium sulphate	1.06E-03	1.18E-03	1.06E-03	1.18E-03	Dimethylamine	7.53E-08	8.36E-08	7.53E-08	8.36E-08
Soil	1.38E+02	1.53E+02	1.49E+02	1.64E+02	Dipropylamine	1.39E-08	1.54E-08	1.39E-08	1.54E-08
Spodumen (LiAlSi2 O6)	2.13E-07	2.36E-07	2.13E-07	2.36E-07	Ethylamine	1.22E-08	1.36E-08	1.22E-08	1.36E-08
Stibnite, in ground	1.41E-10	1.57E-10	1.41E-10	1.57E-10	Ethylenediamine	4.39E-09	4.88E-09	4.39E-09	4.88E-09
Stone from mountains	1.42E-02	1.57E-02	2.25E-01	2.27E-01	Formamide	6.54E-09	7.26E-09	6.54E-09	7.26E-09
Sulphur (bonded)	3.57E-06	3.67E-06	4.11E-06	4.22E-06	Formate	1.64E-06	1.82E-06	1.64E-06	1.82E-06
Sylvite (25% in Sylvinite)	1.98E-02	2.20E-02	1.98E-02	2.20E-02	Formic acid	1.90E-09	2.11E-09	1.90E-09	2.11E-09
Talc	1.07E-04	1.18E-04	1.74E+00	1.74E+00	Chloramine	8.94E-08	9.94E-08	8.94E-08	9.94E-08

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
Tin ore (0.01%)	1.97E-04	2.20E-04	3.94E-04	4.17E-04	Chlorinated solvents, unspecified	5.01E-07	5.57E-07	5.01E-07	5.57E-07
Titanium dioxide	2.57E-03	2.84E-03	2.57E-03	2.84E-03	Chloroacetic acid	5.68E-06	6.17E-06	5.68E-06	6.17E-06
Titanium ore	1.49E-05	1.66E-05	1.68E+00	1.68E+00	Chloroacetyl chloride	5.24E-09	5.82E-09	5.24E-09	5.82E-09
Ulexite	4.50E-06	4.95E-06	4.50E-06	4.95E-06	Chlorosulfonic acid	1.70E-08	1.89E-08	1.70E-08	1.89E-08
Vermiculite	2.90E-06	3.22E-06	2.90E-06	3.22E-06	iso-Butanol	1.05E-08	1.17E-08	1.05E-08	1.17E-08
Zinc - copper ore (4.07%-2.59%)	0.00E+00	0.00E+00	1.80E-06	1.80E-06	Isopropylamine	5.65E-09	6.28E-09	5.65E-09	6.28E-09
Zinc - lead - copper ore (12%-3%-2%)	0.00E+00	0.00E+00	4.86E-07	4.86E-07	Lactic acid	1.09E-08	1.21E-08	1.09E-08	1.21E-08
Zinc - lead ore (4.21%-4.96%)	0.00E+00	0.00E+00	4.05E-18	4.05E-18	Methyl acetate	1.70E-09	1.89E-09	1.70E-09	1.89E-09
Zinc ore (sulphidic, 4%)	0.00E+00	0.00E+00	3.91E-14	3.91E-14	Methyl acrylate	1.16E-06	1.28E-06	1.16E-06	1.28E-06
Renewable resources	4.57E+05	5.09E+05	9.08E+05	9.60E+05	Methyl amine	2.01E-08	2.23E-08	2.01E-08	2.23E-08
Water	4.54E+05	5.06E+05	9.03E+05	9.54E+05	Methyl formate	4.55E-10	5.05E-10	4.55E-10	5.05E-10
Air	1.16E+03	1.30E+03	3.14E+03	3.27E+03	Methyl isobutyl ketone	1.97E-09	2.19E-09	1.97E-09	2.19E-09
Carbon dioxide	1.06E+03	1.18E+03	1.11E+03	1.22E+03	Monoethanolamine	3.41E-10	3.79E-10	3.41E-10	3.79E-10
Forest, primary	8.00E-02	8.00E-02	8.00E-02	8.00E-02	n-Butyl acetate	4.56E-07	5.05E-07	4.56E-07	5.05E-07
Nitrogen	6.44E-02	6.74E-02	6.44E-02	6.74E-02	Nitrobenzene	1.29E-07	1.43E-07	1.29E-07	1.43E-07
Oxygen	2.96E-01	3.29E-01	2.75E-01	3.08E-01	Oils, non-fossil	3.97E-05	4.41E-05	3.97E-05	4.41E-05
Renewable fuels	0.00E+00	0.00E+00	3.06E-14	3.06E-14	Organic compounds (dissolved)	6.16E-06	6.16E-06	6.17E-06	6.17E-06
Soft wood, dry matter	2.33E-09	2.55E-09	2.66E-09	2.88E-09	Organic compounds (unspecified)	8.50E-04	9.45E-04	1.80E-03	1.90E-03
Wood, hard, standing	1.66E+00	1.66E+00	1.66E+00	1.66E+00	Organic chlorine compounds (unspecified)	7.48E-09	7.48E-09	7.49E-09	7.49E-09
Wood, primary forest, standing	4.74E-05	5.20E-05	4.74E-05	5.20E-05	Propionaldehyde	4.64E-09	5.15E-09	4.64E-09	5.15E-09
Wood, soft, standing	5.10E+02	5.65E+02	5.10E+02	5.65E+02	Propionic acid	6.03E-08	6.70E-08	6.03E-08	6.70E-08
Wood, unspecified, standing	5.23E-07	5.81E-07	5.23E-07	5.81E-07	Propylamine	3.12E-09	3.47E-09	3.12E-09	3.47E-09
Deposited goods	3.25E+03	3.62E+03	5.72E+03	6.09E+03	t-Butylamine	1.28E-08	1.42E-08	1.28E-08	1.42E-08
Radioactive waste	2.55E-01	2.86E-01	7.30E-01	7.61E-01	Trimethylamine	3.55E-09	3.94E-09	3.55E-09	3.94E-09
High radioactive waste	3.02E-04	3.39E-04	8.77E-04	9.13E-04	Other emissions to fresh water	3.68E+05	4.11E+05	8.12E+05	8.55E+05
Low radioactive wastes	4.65E-03	5.21E-03	1.31E-02	1.37E-02	Pesticides to fresh water	4.60E-06	5.14E-06	9.85E-06	1.04E-05
Medium radioactive wastes	2.06E-03	2.31E-03	5.67E-03	5.92E-03	Acetochlor	2.90E-16	3.23E-16	3.62E-14	3.63E-14

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
Radioactive tailings	2.48E-01	2.78E-01	7.10E-01	7.40E-01	Alachlor	4.32E-06	4.83E-06	9.26E-06	9.77E-06
Stockpile goods	3.25E+03	3.62E+03	5.72E+03	6.09E+03	Atrazine	2.96E-09	3.31E-09	7.88E-09	8.24E-09
Demolition waste (deposited)	1.11E-08	1.11E-08	1.04E-04	1.04E-04	Benomyl	7.95E-09	8.88E-09	1.71E-08	1.80E-08
Hazardous waste (deposited)	2.71E-05	2.96E-05	1.70E-01	1.70E-01	Bentazone	1.61E-10	1.76E-10	1.82E-10	1.96E-10
Overburden (deposited)	1.86E+03	2.08E+03	4.24E+03	4.46E+03	Carbofuran	1.62E-10	1.81E-10	4.33E-10	4.53E-10
Slag (deposited)	1.96E-08	2.19E-08	9.43E-06	9.43E-06	Cypermethrin	1.10E-14	1.23E-14	2.87E-14	3.00E-14
Spoil (deposited)	2.06E+01	2.29E+01	2.37E+01	2.60E+01	Cyprodinil (CGA-219417)	2.48E-13	2.77E-13	6.46E-13	6.76E-13
Tailings (deposited)	8.86E-01	9.86E-01	9.32E+00	9.41E+00	Deltamethrin	3.59E-10	3.95E-10	3.87E-10	4.24E-10
Treatment residue (mineral, deposited)	0.00E+00	0.00E+00	7.59E-07	7.59E-07	Dicamba	1.94E-17	2.16E-17	2.43E-15	2.43E-15
Waste (deposited)	1.36E+03	1.52E+03	1.45E+03	1.60E+03	Diflufenican	5.78E-14	6.47E-14	1.51E-13	1.58E-13
Emissions to air	6.75E+03	7.52E+03	1.38E+04	1.45E+04	Dimethenamid	5.76E-17	6.40E-17	7.19E-15	7.20E-15
ecoinvent long-term to air	3.50E-04	3.88E-04	3.50E-04	3.88E-04	Dimethoate	2.39E-14	2.66E-14	3.21E-14	3.48E-14
Aluminium	4.18E-05	4.65E-05	4.18E-05	4.65E-05	Ethepron	2.75E-15	3.08E-15	7.18E-15	7.51E-15
Antimony	3.77E-09	4.19E-09	3.77E-09	4.19E-09	Fenvalerate	7.90E-14	8.49E-14	1.51E-13	1.57E-13
Arsenic	2.22E-07	2.46E-07	2.22E-07	2.46E-07	Fipronil	1.98E-18	2.20E-18	2.47E-16	2.47E-16
Barium	2.42E-07	2.69E-07	2.42E-07	2.69E-07	Glyphosate	3.27E-09	3.66E-09	8.24E-09	8.62E-09
Beryllium	5.28E-09	5.87E-09	5.28E-09	5.87E-09	Chloromequat-chloride	9.09E-13	1.02E-12	2.37E-12	2.48E-12
Boron	7.03E-08	7.81E-08	7.03E-08	7.81E-08	Imidacloprid	5.51E-15	6.17E-15	1.44E-14	1.50E-14
Cadmium	5.72E-09	6.35E-09	5.72E-09	6.35E-09	Ioxynil	1.79E-13	2.00E-13	4.67E-13	4.88E-13
Calcium	1.36E-05	1.51E-05	1.36E-05	1.51E-05	Isoproturon	2.34E-13	2.62E-13	6.10E-13	6.38E-13
Cobalt	3.36E-08	3.73E-08	3.36E-08	3.73E-08	Mancozeb	1.43E-07	1.60E-07	3.06E-07	3.23E-07
Copper	3.54E-07	3.94E-07	3.54E-07	3.94E-07	MCPA	3.86E-13	4.32E-13	1.01E-12	1.05E-12
Ethane, 1,1,2-trichloro-1,2,2-trifluoro-, CFC-113	2.73E-09	3.03E-09	2.73E-09	3.03E-09	Mecoprop	2.62E-13	2.93E-13	6.82E-13	7.13E-13
Fluorine	2.55E-06	2.83E-06	2.55E-06	2.83E-06	Methomyl	9.09E-11	1.02E-10	2.08E-10	2.19E-10
Hydrogen sulfide	7.15E-06	7.95E-06	7.15E-06	7.95E-06	Parathion-methyl	9.17E-12	9.98E-12	1.03E-11	1.11E-11
Chlorine	5.19E-07	5.77E-07	5.19E-07	5.77E-07	Sodium chlorate	1.72E-08	1.92E-08	1.72E-08	1.92E-08
Chromium VI	2.70E-08	3.00E-08	2.70E-08	3.00E-08	Terbufos	2.19E-17	2.43E-17	2.73E-15	2.73E-15

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
Iron	4.55E-05	5.06E-05	4.55E-05	5.06E-05	Thiram	1.03E-10	1.12E-10	1.16E-10	1.25E-10
Lead	3.75E-07	4.17E-07	3.75E-07	4.17E-07	Trifluralin	1.03E-07	1.15E-07	2.30E-07	2.42E-07
Magnesium	4.17E-06	4.64E-06	4.17E-06	4.64E-06	Trichlorfon	9.58E-11	1.07E-10	2.56E-10	2.67E-10
Manganese	9.41E-07	1.05E-06	9.41E-07	1.05E-06	Acidity, unspecified	2.22E-07	2.47E-07	2.22E-07	2.47E-07
Mercury	2.88E-09	3.20E-09	2.88E-09	3.20E-09	Collected rainwater to river	1.01E+03	1.12E+03	1.06E+03	1.17E+03
Molybdenum	7.28E-08	8.09E-08	7.28E-08	8.09E-08	Cooling water to river	1.59E+02	1.76E+02	4.97E+03	4.99E+03
Nickel	7.68E-08	8.54E-08	7.68E-08	8.54E-08	Cu-HDO	9.49E-14	1.05E-13	9.49E-14	1.05E-13
Nitrate	3.59E-07	3.99E-07	3.59E-07	3.99E-07	Detergent (unspecified)	4.10E-11	4.56E-11	5.44E-11	5.90E-11
Particulates, < 2.5 um	3.68E-05	4.09E-05	3.68E-05	4.09E-05	Processed water to groundwater	3.00E+02	3.33E+02	3.16E+02	3.50E+02
Particulates, > 10 um	8.35E-05	9.27E-05	8.35E-05	9.27E-05	Processed water to lake	1.88E-10	2.06E-10	2.15E-10	2.33E-10
Particulates, > 2.5 um, and < 10um	5.01E-05	5.56E-05	5.01E-05	5.56E-05	Processed water to river	1.68E+02	1.87E+02	8.53E+02	8.71E+02
Phosphorus	7.03E-08	7.81E-08	7.03E-08	7.81E-08	Turbined water to river	4.93E+02	5.47E+02	5.32E+04	5.32E+04
Potassium	7.16E-06	7.95E-06	7.16E-06	7.95E-06	Water	4.19E+04	4.65E+04	4.19E+04	4.65E+04
Radon-222	0.00E+00	0.00E+00	0.00E+00	0.00E+00	Particles to fresh water	1.44E+00	1.61E+00	2.80E+00	2.96E+00
Scandium	1.50E-07	1.66E-07	1.50E-07	1.66E-07	Dust (> PM10)	-1.57E-12	-1.84E-12	1.71E-11	1.68E-11
Selenium	2.09E-08	2.32E-08	2.09E-08	2.32E-08	Metals (unspecified)	6.38E-06	6.38E-06	6.38E-06	6.38E-06
Silicon	9.32E-06	1.04E-05	9.32E-06	1.04E-05	Silicon dioxide (silica)	7.61E-09	8.46E-09	1.06E-08	1.15E-08
Silver	6.26E-09	6.96E-09	6.26E-09	6.96E-09	Soil loss by erosion into water	1.19E+00	1.32E+00	2.33E+00	2.46E+00
Sodium	2.46E-06	2.73E-06	2.46E-06	2.73E-06	Solids (suspended)	2.57E-01	2.85E-01	4.76E-01	5.04E-01
Strontium	1.52E-07	1.69E-07	1.52E-07	1.69E-07	Radioactive emissions to fresh water	1.72E+04	1.92E+04	4.81E+04	5.02E+04
Sulphate	3.85E-05	4.28E-05	3.85E-05	4.28E-05	Radium (Ra226)	1.72E+04	1.92E+04	4.81E+04	5.02E+04
Tin	8.72E-09	9.69E-09	8.72E-09	9.69E-09	Emissions to sea water	2.07E+02	2.31E+02	3.18E+02	3.42E+02
Titanium	2.73E-06	3.04E-06	2.73E-06	3.04E-06	Analytical measures to sea water	4.15E-02	4.59E-02	4.20E-02	4.64E-02
Tungsten	1.69E-08	1.88E-08	1.69E-08	1.88E-08	Adsorbable organic halogen compounds (AOX)	6.67E-08	7.38E-08	6.67E-08	7.38E-08
Vanadium	2.60E-07	2.88E-07	2.60E-07	2.88E-07	Biological oxygen demand (BOD)	1.55E-02	1.71E-02	1.55E-02	1.71E-02
Zinc	2.69E-07	2.99E-07	2.69E-07	2.99E-07	DOC, Dissolved Organic Carbon	2.03E-03	2.26E-03	2.03E-03	2.26E-03
Heavy metals to air	1.22E-03	1.35E-03	4.61E-03	4.74E-03	Chemical oxygen demand (COD)	1.63E-02	1.80E-02	1.69E-02	1.86E-02

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
Antimony	5.29E-05	5.88E-05	5.41E-05	6.00E-05	Nitrogenous Matter (unspecified, as N)	5.36E-06	5.96E-06	5.71E-06	6.30E-06
Arsenic	2.64E-06	2.93E-06	2.64E-06	2.93E-06	Solids (dissolved)	1.96E-08	2.19E-08	4.27E-08	4.49E-08
Arsenic (+V)	3.19E-05	3.55E-05	3.85E-05	4.20E-05	Total dissolved organic bound carbon (TOC)	2.76E-03	3.04E-03	2.76E-03	3.04E-03
Arsenic trioxide	1.11E-11	1.23E-11	2.25E-11	2.37E-11	Total organic bound carbon (TOC)	4.87E-03	5.38E-03	4.89E-03	5.40E-03
Cadmium	1.24E-05	1.37E-05	6.02E-05	6.15E-05	Heavy metals to sea water	1.75E-04	1.93E-04	2.35E-04	2.53E-04
Cobalt	1.16E-05	1.29E-05	1.30E-05	1.42E-05	Arsenic	3.52E-10	3.91E-10	3.57E-10	3.96E-10
Copper	1.21E-04	1.34E-04	1.55E-04	1.69E-04	Arsenic (+V)	1.15E-05	1.27E-05	2.00E-05	2.12E-05
Heavy metals to air (unspecified)	-1.10E-04	-1.22E-04	-1.09E-04	-1.21E-04	Cadmium	4.95E-06	5.43E-06	8.65E-06	9.13E-06
Hydrogen arsenic (arsine)	9.22E-10	1.02E-09	1.87E-09	1.97E-09	Cobalt	1.10E-09	1.20E-09	2.94E-09	3.04E-09
Chromium	1.49E-04	1.64E-04	1.58E-04	1.73E-04	Copper	7.22E-06	7.97E-06	1.60E-05	1.68E-05
Chromium (+III)	8.41E-06	9.34E-06	2.27E-04	2.28E-04	Chromium	1.78E-05	1.95E-05	4.88E-05	5.06E-05
Chromium (+VI)	3.79E-06	4.18E-06	3.79E-06	4.18E-06	Chromium (+III)	5.25E-07	5.83E-07	5.25E-07	5.83E-07
Iron	5.55E-04	6.15E-04	9.20E-04	9.80E-04	Chromium (+VI)	4.05E-07	4.46E-07	4.05E-07	4.46E-07
Lanthanum	1.26E-15	1.40E-15	1.59E-12	1.59E-12	Iron	3.18E-06	3.49E-06	3.20E-06	3.51E-06
Lead	1.14E-04	1.26E-04	2.32E-04	2.45E-04	Lead	4.84E-06	5.32E-06	7.64E-06	8.13E-06
Manganese	7.12E-05	7.89E-05	2.66E-04	2.74E-04	Manganese	4.52E-06	4.99E-06	4.53E-06	5.00E-06
Mercury	5.14E-05	5.71E-05	2.28E-03	2.28E-03	Mercury	3.22E-08	3.55E-08	5.56E-08	5.88E-08
Molybdenum	7.44E-06	8.26E-06	7.55E-06	8.37E-06	Molybdenum	3.91E-08	4.33E-08	3.91E-08	4.33E-08
Nickel	-4.04E-04	-4.50E-04	-3.96E-04	-4.41E-04	Nickel	6.69E-06	7.34E-06	1.16E-05	1.22E-05
Palladium	1.86E-16	2.07E-16	1.65E-15	1.67E-15	Selenium	5.86E-08	6.49E-08	5.86E-08	6.49E-08
Platinum	4.66E-12	5.12E-12	4.66E-12	5.12E-12	Silver	5.58E-08	6.15E-08	5.58E-08	6.15E-08
Rhodium	1.80E-16	2.00E-16	1.60E-15	1.62E-15	Tin	7.63E-15	8.51E-15	4.19E-13	4.20E-13
Scandium	3.63E-07	3.97E-07	3.63E-07	3.97E-07	Titanium	1.15E-08	1.27E-08	1.15E-08	1.27E-08
Selenium	2.98E-05	3.32E-05	6.24E-05	6.59E-05	Vanadium	6.90E-08	7.67E-08	7.02E-08	7.79E-08
Silver	2.11E-06	2.35E-06	4.23E-06	4.48E-06	Zinc	1.13E-04	1.25E-04	1.13E-04	1.25E-04
Tellurium	6.64E-06	7.38E-06	6.87E-06	7.60E-06	Zirconium	5.28E-12	5.87E-12	7.01E-12	7.59E-12
Thallium	1.43E-06	1.59E-06	1.61E-06	1.77E-06	Inorganic emissions to sea water	5.99E-01	6.58E-01	9.78E-01	1.04E+00

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
Thorium	1.13E-07	1.26E-07	1.13E-07	1.26E-07	Aluminium	4.60E-05	5.08E-05	4.60E-05	5.08E-05
Tin	1.89E-05	2.11E-05	2.98E-05	3.19E-05	Ammonia	8.75E-13	9.73E-13	4.11E-11	4.12E-11
Titanium	3.00E-05	3.32E-05	3.22E-05	3.54E-05	Ammonium / ammonia	2.53E-05	2.80E-05	2.54E-05	2.81E-05
Tungsten	3.25E-08	3.54E-08	3.25E-08	3.54E-08	Barite	2.05E-03	2.26E-03	2.05E-03	2.26E-03
Vanadium	2.78E-04	3.08E-04	2.93E-04	3.23E-04	Barium	1.80E-04	1.98E-04	2.55E-04	2.73E-04
Zinc	1.73E-04	1.91E-04	2.69E-04	2.87E-04	Beryllium	2.63E-14	2.95E-14	1.00E-10	1.00E-10
Zirconium	1.07E-08	1.16E-08	1.07E-08	1.16E-08	Boron	2.77E-06	3.07E-06	2.77E-06	3.07E-06
Inorganic emissions to air	5.23E+03	5.82E+03	1.05E+04	1.11E+04	Bromine	6.51E-05	7.18E-05	6.51E-05	7.18E-05
Aluminium	2.51E-03	2.77E-03	2.51E-03	2.78E-03	Calcium	3.75E-03	4.13E-03	3.75E-03	4.13E-03
Ammonia	1.81E-02	2.01E-02	2.65E-02	2.85E-02	Carbonate	6.24E-03	6.84E-03	1.09E-02	1.15E-02
Ammonium	1.16E-06	1.29E-06	1.36E-05	1.38E-05	Carboxylic acids, unspecified	1.96E-04	2.18E-04	1.96E-04	2.18E-04
Ammonium carbonate	1.45E-08	1.52E-08	1.45E-08	1.52E-08	Cesium	9.30E-08	1.03E-07	9.30E-08	1.03E-07
Ammonium nitrate	2.39E-17	2.72E-17	1.06E-12	1.06E-12	Cyanide	6.40E-06	7.10E-06	6.41E-06	7.10E-06
Argon	8.21E-05	9.16E-05	1.68E-04	1.77E-04	Fluoride	3.21E-05	3.55E-05	3.49E-05	3.82E-05
Barium	5.82E-05	6.49E-05	1.28E-04	1.34E-04	Hydrogen carbonate	3.83E-05	4.26E-05	3.83E-05	4.26E-05
Beryllium	3.53E-06	3.93E-06	3.94E-06	4.33E-06	Hypochlorite	3.22E-06	3.54E-06	3.22E-06	3.54E-06
Boric acid	1.24E-16	1.37E-16	1.24E-16	1.37E-16	Chloride	5.45E-01	5.99E-01	9.17E-01	9.70E-01
Boron	1.14E-04	1.25E-04	1.14E-04	1.25E-04	Iodide	9.30E-06	1.03E-05	9.30E-06	1.03E-05
Boron compounds (unspecified)	4.57E-04	5.11E-04	1.24E-03	1.29E-03	Magnesium	9.44E-04	1.04E-03	9.47E-04	1.05E-03
Boron trifluoride	8.37E-13	9.29E-13	8.37E-13	9.29E-13	Nitrate	7.78E-05	8.58E-05	1.07E-04	1.15E-04
Bromine	1.12E-04	1.25E-04	2.76E-04	2.90E-04	Nitrate (as total N)	8.91E-13	9.94E-13	1.76E-12	1.87E-12
Calcium	5.00E-05	5.55E-05	5.00E-05	5.55E-05	Nitrite	2.04E-06	2.26E-06	2.57E-06	2.79E-06
Carbon dioxide	8.13E+02	9.04E+02	1.17E+03	1.26E+03	Nitrogen	4.98E-07	5.50E-07	5.00E-07	5.52E-07
Carbon dioxide (aviation)	1.51E-03	1.69E-03	2.87E-03	3.04E-03	Nitrogen (as total N)	2.37E-11	2.60E-11	2.71E-11	2.94E-11
Carbon dioxide (biotic)	2.38E+02	2.65E+02	2.82E+02	3.08E+02	Nitrogen organic bound	5.62E-05	6.23E-05	5.62E-05	6.23E-05
Carbon dioxide (land use change)	6.09E-01	6.72E-01	9.87E-01	1.05E+00	Phosphate	2.81E-05	3.10E-05	2.81E-05	3.10E-05
Carbon dioxide (peat oxidation)	1.25E-05	1.39E-05	2.41E-05	2.55E-05	Phosphorus	1.54E-06	1.71E-06	1.55E-06	1.72E-06

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
Carbon disulphide	2.99E-04	3.31E-04	2.99E-04	3.31E-04	Potassium	5.26E-04	5.81E-04	5.26E-04	5.81E-04
Carbon monoxide	2.61E+00	2.89E+00	3.44E+00	3.73E+00	Rubidium	1.47E-07	1.63E-07	1.47E-07	1.63E-07
Carbon monoxide, non-fossil	6.14E-03	6.78E-03	6.14E-03	6.78E-03	Silicon	2.60E-08	2.89E-08	2.60E-08	2.89E-08
Cyanide (unspecified)	1.64E-04	1.82E-04	1.65E-04	1.83E-04	Sodium	3.23E-02	3.57E-02	3.27E-02	3.60E-02
Elemental carbon	7.14E-09	7.93E-09	7.14E-09	7.93E-09	Strontium	1.74E-04	1.92E-04	1.75E-04	1.92E-04
Fluoride	7.44E-05	8.18E-05	1.70E-04	1.77E-04	Sulphate	5.64E-03	6.21E-03	7.62E-03	8.20E-03
Fluorine	7.52E-06	8.19E-06	7.66E-06	8.33E-06	Sulphide	1.14E-03	1.25E-03	1.99E-03	2.10E-03
Fluosilicic acid	1.26E-06	1.39E-06	1.26E-06	1.39E-06	Sulphur	1.61E-06	1.78E-06	1.68E-06	1.85E-06
Helium	2.53E-05	2.80E-05	2.54E-05	2.81E-05	Organic emissions to sea water	5.88E-03	6.50E-03	6.11E-03	6.73E-03
Hydrogen	2.39E-02	2.65E-02	2.51E-02	2.78E-02	Halogenated organic emissions to sea water	1.72E-13	1.75E-13	1.73E-13	1.76E-13
Hydrogen bromide (hydrobromic acid)	1.03E-07	1.16E-07	2.50E-07	2.62E-07	Chlorous dissolvent	1.71E-13	1.74E-13	1.71E-13	1.74E-13
Hydrogen cyanide (prussic acid)	-2.87E-09	-3.15E-09	1.20E-07	1.20E-07	Tetrachloroethene (perchloroethylene)	9.09E-16	1.01E-15	1.91E-15	2.01E-15
Hydrogen fluoride	1.35E-03	1.50E-03	1.97E-03	2.12E-03	Hydrocarbons to sea water	5.88E-03	6.50E-03	6.11E-03	6.72E-03
Hydrogen chloride	1.63E-02	1.82E-02	3.50E-02	3.68E-02	Acenaphthene	1.68E-08	1.84E-08	3.11E-08	3.27E-08
Hydrogen iodide	5.01E-13	5.58E-13	8.38E-13	8.95E-13	Acenaphthylene	6.99E-09	7.68E-09	1.28E-08	1.35E-08
Hydrogen peroxide	1.37E-07	1.52E-07	1.37E-07	1.52E-07	Acetic acid	2.90E-14	3.26E-14	2.99E-10	2.99E-10
Hydrogen phosphorous	2.19E-09	2.44E-09	4.11E-09	4.36E-09	Alkane (unspecified)	1.21E-05	1.33E-05	1.21E-05	1.33E-05
Hydrogen sulphide	1.17E-02	1.30E-02	2.70E-02	2.83E-02	Alkene (unspecified)	1.12E-06	1.23E-06	1.12E-06	1.23E-06
Chloride (unspecified)	3.52E-05	3.86E-05	5.73E-05	6.07E-05	Anthracene	3.02E-08	3.32E-08	5.75E-08	6.05E-08
Chlorine	5.50E-05	5.98E-05	9.24E-05	9.71E-05	Aromatic hydrocarbons (unspecified)	5.42E-05	5.98E-05	5.44E-05	6.00E-05
Iodine	8.47E-06	9.34E-06	8.47E-06	9.34E-06	Benzene	4.62E-05	5.08E-05	7.47E-05	7.93E-05
Lead dioxide	8.89E-12	9.88E-12	9.95E-12	1.09E-11	Benzo{a}anthracene	1.86E-09	2.04E-09	3.31E-09	3.49E-09
Lithium	1.22E-12	1.35E-12	1.22E-12	1.35E-12	Benzofluoranthene	2.26E-10	2.48E-10	4.24E-10	4.46E-10
Magnesium	2.43E-04	2.70E-04	2.43E-04	2.70E-04	Cresol (methyl phenol)	5.60E-15	6.26E-15	3.08E-13	3.09E-13
Nitrate	3.21E-06	3.54E-06	3.21E-06	3.54E-06	Ethyl benzene	4.26E-06	4.68E-06	5.81E-06	6.23E-06
Nitrogen (atmospheric nitrogen)	4.04E-02	4.50E-02	2.41E-01	2.45E-01	Fatty acids (calculated as total carbon)	4.49E-04	4.95E-04	4.49E-04	4.95E-04
Nitrogen (N-compounds)	3.44E-05	3.82E-05	3.44E-05	3.82E-05	Fluoranthene	2.10E-09	2.31E-09	5.20E-09	5.40E-09

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
Nitrogen dioxide	2.53E-02	2.71E-02	2.62E-02	2.80E-02	Glutaraldehyde	2.53E-07	2.80E-07	2.53E-07	2.80E-07
Nitrogen monoxide	8.96E-02	9.69E-02	9.46E-02	1.02E-01	Hexane (isomers)	6.12E-16	6.83E-16	3.37E-14	3.37E-14
Nitrogen oxides	9.90E-01	1.10E+00	1.53E+00	1.64E+00	Hydrocarbons (unspecified)	3.91E-05	4.32E-05	3.91E-05	4.32E-05
Nitrogen, total	2.49E-12	2.76E-12	2.49E-12	2.76E-12	Chrysene	6.79E-09	7.46E-09	1.21E-08	1.27E-08
Nitrogentriflouride	5.81E-09	6.48E-09	1.10E-08	1.17E-08	Methanol	3.50E-06	3.87E-06	3.50E-06	3.87E-06
Nitrous oxide (laughing gas)	9.87E-03	1.10E-02	2.04E-02	2.15E-02	Methyl tert-butylether	1.12E-06	1.23E-06	1.12E-06	1.23E-06
Oxygen	3.97E+00	4.44E+00	1.09E+01	1.14E+01	Oil (unspecified)	5.12E-03	5.66E-03	5.26E-03	5.80E-03
Ozone	1.03E-04	1.13E-04	1.03E-04	1.13E-04	Phenol (hydroxy benzene)	5.24E-05	5.76E-05	8.07E-05	8.60E-05
Phosphoric acid	4.38E-15	4.87E-15	4.38E-15	4.87E-15	Polycyclic aromatic hydrocarbons (PAH, unspec.)	9.44E-07	1.04E-06	9.44E-07	1.04E-06
Phosphorus	8.88E-06	9.58E-06	8.88E-06	9.58E-06	Toluene (methyl benzene)	3.95E-05	4.34E-05	5.67E-05	6.07E-05
Phosphorus trichloride	4.57E-12	5.08E-12	4.57E-12	5.08E-12	Triethylene glycol	2.93E-06	3.24E-06	2.93E-06	3.24E-06
Potassium	6.10E-14	6.69E-14	6.98E-14	7.56E-14	VOC (unspecified)	3.25E-05	3.59E-05	3.25E-05	3.59E-05
Silicium tetrafluoride	9.12E-09	1.01E-08	1.01E-08	1.11E-08	Xylene (isomers; dimethyl benzene)	2.06E-05	2.27E-05	2.68E-05	2.89E-05
Sodium	2.75E-05	3.05E-05	2.75E-05	3.05E-05	Ethylene Glycol	6.36E-12	6.95E-12	1.12E-11	1.18E-11
Sodium dichromate	2.29E-08	2.51E-08	2.29E-08	2.51E-08	Naphthalene	1.17E-06	1.28E-06	2.05E-06	2.17E-06
Sodium formate	4.69E-08	5.20E-08	4.69E-08	5.20E-08	Other emissions to sea water	2.07E+02	2.30E+02	3.17E+02	3.40E+02
Sodium hydroxide	5.10E-07	5.65E-07	5.10E-07	5.65E-07	Pesticides to sea water	1.26E-06	1.39E-06	1.26E-06	1.39E-06
Sodium tetrahydridoborate	1.61E-12	1.79E-12	1.61E-12	1.79E-12	Acetamide	5.80E-09	6.45E-09	5.80E-09	6.45E-09
Strontium	1.41E-05	1.56E-05	1.41E-05	1.56E-05	Diquat-dibromide	1.61E-17	1.79E-17	1.61E-17	1.79E-17
Sulphate	2.00E-02	2.22E-02	2.00E-02	2.22E-02	Tributyltinoxide	1.25E-06	1.39E-06	1.25E-06	1.39E-06
Sulphur	4.50E-07	5.04E-07	1.33E-06	1.38E-06	Cooling water to sea	1.99E+02	2.22E+02	2.97E+02	3.19E+02
Sulphur dioxide	5.46E-01	6.07E-01	9.97E-01	1.06E+00	Processed water to sea	7.76E-01	8.62E-01	1.34E+01	1.35E+01
Sulphur hexafluoride	1.97E-06	2.17E-06	1.97E-06	2.17E-06	Water	6.80E+00	7.56E+00	6.80E+00	7.56E+00
Sulphur oxides	3.92E-07	4.36E-07	3.92E-07	4.36E-07	Particles to sea water	1.66E-02	1.84E-02	3.03E-02	3.20E-02
Sulphur trioxide	4.00E-05	4.47E-05	8.20E-05	8.67E-05	Solids (suspended)	1.66E-02	1.84E-02	3.03E-02	3.20E-02
Sulphuric acid	2.59E-07	2.88E-07	4.01E-07	4.30E-07	Emissions to agricultural soil	7.12E-02	7.88E-02	7.13E-02	7.89E-02
Tetramethyl ammonium hydroxide	5.81E-11	6.45E-11	5.81E-11	6.45E-11	Heavy metals to agricultural soil	4.90E-04	5.39E-04	5.68E-04	6.16E-04

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
Tin oxide	1.49E-18	1.67E-18	2.69E-16	2.69E-16	Antimony	1.55E-10	1.72E-10	1.55E-10	1.72E-10
Total reduced sulphur compounds	1.50E-10	1.50E-10	1.50E-10	1.50E-10	Arsenic	2.45E-08	2.72E-08	2.45E-08	2.72E-08
Water (evapotranspiration)	3.31E+03	3.69E+03	6.53E+03	6.91E+03	Arsenic (+V)	2.30E-08	2.48E-08	2.77E-08	2.95E-08
Water vapour	8.55E+02	9.57E+02	2.45E+03	2.55E+03	Cadmium	2.62E-06	2.91E-06	4.92E-06	5.21E-06
Zinc chloride	6.27E-20	6.96E-20	9.33E-16	9.33E-16	Cobalt	5.68E-08	6.11E-08	6.12E-08	6.55E-08
Zinc oxide	2.98E-18	3.34E-18	5.37E-16	5.38E-16	Copper	1.37E-05	1.51E-05	2.36E-05	2.50E-05
Zinc sulphate	1.94E-08	2.15E-08	3.93E-08	4.14E-08	Chromium	1.28E-06	1.40E-06	1.21E-06	1.33E-06
Organic emissions to air (group VOC)	1.06E+00	1.18E+00	1.76E+00	1.88E+00	Chromium (+III)	1.89E-05	2.09E-05	3.06E-05	3.26E-05
Group NMVOC to air	3.63E-01	4.02E-01	4.22E-01	4.60E-01	Iron	3.04E-04	3.35E-04	3.08E-04	3.39E-04
Group PAH to air	1.69E-04	1.88E-04	1.80E-04	1.99E-04	Lead	2.98E-05	3.30E-05	4.13E-05	4.44E-05
Halogenated organic emissions to air	2.99E-05	3.31E-05	3.49E-05	3.80E-05	Manganese	4.32E-05	4.58E-05	4.35E-05	4.60E-05
1,3,5-Trimethylbenzene	3.78E-09	4.08E-09	3.94E-09	4.24E-09	Mercury	2.00E-07	2.21E-07	3.22E-07	3.43E-07
1-Butanol	7.21E-09	8.01E-09	7.21E-09	8.01E-09	Molybdenum	1.67E-08	1.81E-08	2.14E-08	2.29E-08
1-Butylene (Vinylacetylene)	2.18E-07	2.36E-07	2.28E-07	2.45E-07	Nickel	7.89E-06	8.70E-06	1.12E-05	1.20E-05
1-Methoxy-2-propanol	2.01E-08	2.24E-08	3.85E-08	4.08E-08	Silver	2.03E-08	2.25E-08	4.08E-08	4.30E-08
1-Pentanol	1.49E-09	1.65E-09	1.49E-09	1.65E-09	Tin	3.18E-08	3.53E-08	1.31E-06	1.31E-06
1-Pentene	7.76E-07	8.38E-07	8.08E-07	8.70E-07	Titanium	2.93E-06	3.10E-06	2.93E-06	3.10E-06
1-Propanol	4.52E-08	5.02E-08	4.52E-08	5.02E-08	Vanadium	8.39E-08	8.88E-08	8.87E-08	9.36E-08
1-Tetradecane	5.68E-11	6.14E-11	5.92E-11	6.37E-11	Zinc	6.55E-05	7.21E-05	9.86E-05	1.05E-04
1-Tridecane	1.77E-10	1.91E-10	1.84E-10	1.98E-10	Inorganic emissions to agricultural soil	6.03E-04	6.66E-04	6.49E-04	7.12E-04
1-Undecane	8.28E-11	8.94E-11	8.62E-11	9.28E-11	Aluminium	7.46E-05	8.05E-05	8.20E-05	8.79E-05
2,2,4-Trimethylpentane	1.41E-07	1.52E-07	1.46E-07	1.58E-07	Ammonia	4.56E-11	5.07E-11	4.59E-11	5.10E-11
2,2-Dimethylbutane	1.49E-07	1.61E-07	1.55E-07	1.67E-07	Barium	9.92E-09	1.10E-08	9.92E-09	1.10E-08
2,4-Dimethylpentane	5.85E-08	6.32E-08	6.10E-08	6.57E-08	Boron	1.35E-09	1.50E-09	1.35E-09	1.50E-09
2-Aminopropanol	1.63E-09	1.81E-09	1.63E-09	1.81E-09	Calcium	2.62E-04	2.91E-04	2.62E-04	2.91E-04
2-Methyl-1-butene	5.60E-07	6.05E-07	5.83E-07	6.28E-07	Chloride	2.91E-06	3.23E-06	2.91E-06	3.23E-06
2-Methyl-2-butene	1.59E-12	1.77E-12	1.59E-12	1.77E-12	Chlorine	3.88E-06	3.95E-06	5.94E-06	6.01E-06

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
2-Methylpentane	1.01E-06	1.09E-06	1.06E-06	1.14E-06	Magnesium	2.95E-05	3.28E-05	2.95E-05	3.28E-05
2-Nitrobenzoic acid	3.07E-09	3.41E-09	3.07E-09	3.41E-09	Phosphorus	2.08E-05	2.20E-05	2.08E-05	2.20E-05
3-Methylpentane	5.15E-07	5.57E-07	5.36E-07	5.78E-07	Potassium	8.48E-05	9.42E-05	1.20E-04	1.30E-04
Acenaphthene	6.43E-09	7.13E-09	1.23E-08	1.30E-08	Silicon	7.67E-05	8.53E-05	7.67E-05	8.53E-05
Acetaldehyde (Ethanal)	5.24E-04	5.82E-04	6.11E-04	6.69E-04	Strontium	2.55E-08	2.82E-08	2.55E-08	2.82E-08
Acetic acid	2.97E-04	3.30E-04	4.13E-04	4.46E-04	Sulphur	4.84E-05	5.27E-05	4.95E-05	5.38E-05
Acetone (dimethyl ketone)	2.19E-04	2.43E-04	2.36E-04	2.60E-04	Sulphuric acid	6.12E-11	6.79E-11	6.12E-11	6.79E-11
Acetonitrile	8.41E-06	9.34E-06	8.41E-06	9.34E-06	Organic emissions to agricultural soil	6.91E-02	7.65E-02	6.91E-02	7.65E-02
Acrolein	2.93E-05	3.25E-05	2.93E-05	3.25E-05	Amidosulfuron	2.48E-13	2.76E-13	2.48E-13	2.76E-13
Acrylic acid	4.72E-08	5.23E-08	4.72E-08	5.23E-08	Azoxystrobin	1.11E-08	1.23E-08	1.11E-08	1.23E-08
Acrylonitrile	1.28E-11	1.43E-11	2.70E-11	2.84E-11	Bromoxynil	2.84E-12	3.16E-12	2.84E-12	3.16E-12
Aldehyde (unspecified)	1.74E-06	1.94E-06	4.14E-06	4.34E-06	Carbon (unspecified)	3.40E-03	3.77E-03	3.40E-03	3.77E-03
Alkane (unspecified)	1.61E-03	1.79E-03	3.81E-03	3.99E-03	Mepiquat chloride	1.99E-08	2.21E-08	1.99E-08	2.21E-08
Alkene (unspecified)	1.17E-03	1.31E-03	3.33E-03	3.47E-03	Oil (unspecified)	3.44E-02	3.79E-02	3.44E-02	3.79E-02
Aniline	2.24E-08	2.48E-08	2.24E-08	2.48E-08	Oils, non-fossil	3.13E-02	3.48E-02	3.13E-02	3.48E-02
Anthranilic acid	2.38E-09	2.64E-09	2.38E-09	2.64E-09	Other emissions to agricultural soil	1.03E-03	1.09E-03	1.03E-03	1.09E-03
Benzaldehyde	2.66E-04	2.96E-04	2.66E-04	2.96E-04	Pesticides to agricultural soil	3.21E-04	3.56E-04	3.21E-04	3.56E-04
Benzene	3.48E-03	3.79E-03	3.76E-03	4.07E-03	2,4-Dichlorophenoxyacetic acid (2,4-D)	6.38E-05	7.09E-05	6.38E-05	7.09E-05
Benzo(b)fluoranthene	1.55E-13	1.72E-13	1.55E-13	1.72E-13	Acephate	8.03E-07	8.92E-07	8.03E-07	8.92E-07
Biphenyl	7.78E-11	8.40E-11	8.11E-11	8.73E-11	Acetamide	1.13E-07	1.25E-07	1.13E-07	1.25E-07
Butadiene	1.01E-08	1.13E-08	1.01E-08	1.13E-08	Acetochlor	2.60E-10	2.89E-10	2.60E-10	2.89E-10
Butane (n-butane)	1.92E-03	2.12E-03	4.53E-03	4.73E-03	Acifluorfen	1.39E-10	1.54E-10	1.39E-10	1.54E-10
Butanone (methyl ethyl ketone)	9.11E-05	1.01E-04	9.11E-05	1.01E-04	Aclonifen	1.22E-07	1.23E-07	1.22E-07	1.23E-07
Butene	1.24E-05	1.37E-05	3.93E-03	3.93E-03	Alachlor	1.06E-09	1.18E-09	1.06E-09	1.18E-09
Butylene glycol (butane diol)	1.35E-08	1.49E-08	1.35E-08	1.49E-08	Aldicarb	2.70E-06	3.00E-06	2.70E-06	3.00E-06
Butyrolactone	3.09E-10	3.43E-10	3.09E-10	3.43E-10	Aldrin	2.58E-07	2.87E-07	2.58E-07	2.87E-07
C12-14 fatty alcohol	1.78E-12	1.99E-12	3.49E-12	3.69E-12	Anthraquinone	4.75E-16	5.28E-16	4.75E-16	5.28E-16

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
Caprolactam	1.20E-09	1.33E-09	1.97E-09	2.10E-09	Asulam	9.93E-14	1.10E-13	9.93E-14	1.10E-13
cis-2-Pentene	5.78E-07	6.24E-07	6.02E-07	6.48E-07	Atrazine	7.37E-08	8.19E-08	7.37E-08	8.19E-08
Cumene (isopropylbenzene)	9.75E-04	9.77E-04	9.75E-04	9.77E-04	Azodrin	5.16E-06	5.74E-06	5.16E-06	5.74E-06
Cyanoacetic acid	5.58E-09	6.19E-09	5.58E-09	6.19E-09	Benomyl	2.14E-08	2.38E-08	2.14E-08	2.38E-08
Cycloalkanes (unspec.)	1.02E-05	1.11E-05	1.02E-05	1.11E-05	Bentazone	6.26E-08	6.30E-08	6.26E-08	6.30E-08
Cyclohexane (hexahydro benzene)	-1.02E-07	-1.13E-07	-7.47E-08	-8.60E-08	Bifenox	1.86E-16	2.07E-16	1.86E-16	2.07E-16
Cyclopentane	9.88E-08	1.07E-07	1.03E-07	1.11E-07	Bifenthrin	9.47E-13	1.05E-12	9.47E-13	1.05E-12
Decane	3.43E-09	3.70E-09	3.57E-09	3.85E-09	Bitertanol	3.68E-17	4.09E-17	3.68E-17	4.09E-17
Diethyl ether	1.03E-14	1.15E-14	1.03E-14	1.15E-14	Bromuconazole	7.05E-18	7.83E-18	7.05E-18	7.83E-18
Diethylamine	1.05E-08	1.17E-08	1.08E-08	1.20E-08	Carbaryl	1.48E-10	1.64E-10	1.48E-10	1.64E-10
Diethylene glycol	8.75E-15	9.72E-15	8.75E-15	9.72E-15	Carbendazim	7.71E-08	8.57E-08	7.71E-08	8.57E-08
Dimethyl malonate	7.00E-09	7.77E-09	7.00E-09	7.77E-09	Carbetamide	4.02E-08	4.24E-08	4.02E-08	4.24E-08
Dimethylamine	5.29E-11	5.89E-11	7.89E-11	8.49E-11	Carbofuran	1.17E-05	1.30E-05	1.17E-05	1.30E-05
Dipropylamine	5.79E-09	6.43E-09	5.79E-09	6.43E-09	Carfentrazone ethyl ester	5.33E-18	5.92E-18	5.33E-18	5.92E-18
Dodecane	1.85E-10	1.99E-10	1.92E-10	2.07E-10	Carfentrazone-ethyl	1.27E-11	1.41E-11	1.27E-11	1.41E-11
Ethane	6.41E-03	7.07E-03	1.24E-02	1.31E-02	Cinidon-ethyl	3.01E-13	3.34E-13	3.01E-13	3.34E-13
Ethanol	4.48E-05	4.97E-05	7.15E-05	7.64E-05	Clethodim	2.12E-07	2.36E-07	2.12E-07	2.36E-07
Ethene (ethylene)	3.35E-04	3.71E-04	3.54E-04	3.90E-04	Clodinafop-propargyl	1.44E-16	1.60E-16	1.44E-16	1.60E-16
Ethine (acetylene)	3.28E-05	3.64E-05	3.28E-05	3.64E-05	Clopyralid	6.93E-11	7.70E-11	6.93E-11	7.70E-11
Ethyl benzene	1.06E-03	1.19E-03	3.21E-03	3.34E-03	Cloquintocet-mexyl	3.47E-17	3.86E-17	3.47E-17	3.86E-17
Ethylamine	5.10E-09	5.66E-09	5.10E-09	5.66E-09	Cloransulam-methyl	6.38E-08	7.09E-08	6.38E-08	7.09E-08
Ethylene acetate (ethyl acetate)	9.11E-05	1.01E-04	9.11E-05	1.01E-04	Cyfluthrin	6.67E-09	7.42E-09	6.67E-09	7.42E-09
Ethylene oxide	2.97E-07	3.30E-07	2.97E-07	3.30E-07	Cyhalothrin, gamma-	2.78E-10	3.08E-10	2.78E-10	3.08E-10
Ethylenediamine	1.82E-09	2.02E-09	1.82E-09	2.02E-09	Cypermethrin	1.78E-06	1.97E-06	1.78E-06	1.97E-06
Fatty methylester	1.81E-12	2.02E-12	3.53E-12	3.74E-12	Cyproconazole	3.64E-12	4.05E-12	3.64E-12	4.05E-12
Fluoranthene	5.46E-09	6.04E-09	1.25E-08	1.31E-08	Cyprodinil (CGA-219417)	4.30E-12	4.78E-12	4.30E-12	4.78E-12
Fluorene	1.73E-08	1.92E-08	3.98E-08	4.17E-08	Deltamethrin	1.28E-10	1.42E-10	1.28E-10	1.42E-10

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
Formaldehyde (methanal)	2.10E-02	2.34E-02	2.22E-02	2.45E-02	Dicamba	8.82E-11	9.80E-11	8.82E-11	9.80E-11
Formamide	2.72E-09	3.03E-09	2.72E-09	3.03E-09	Diclofop	7.21E-16	8.01E-16	7.21E-16	8.01E-16
Formic acid (methane acid)	5.15E-05	5.72E-05	5.15E-05	5.72E-05	Diclofop-methyl	7.52E-16	8.36E-16	7.52E-16	8.36E-16
Furan	2.24E-04	2.49E-04	2.24E-04	2.49E-04	Dicrotophos	1.47E-07	1.64E-07	1.47E-07	1.64E-07
Heptane (isomers)	1.72E-04	1.90E-04	2.44E-04	2.62E-04	Difenoconazole	2.58E-10	2.86E-10	2.58E-10	2.86E-10
Hexamethylene diamine (HMDA)	-3.45E-18	-3.76E-18	2.48E-14	2.48E-14	Diflubenzuron	4.23E-05	4.70E-05	4.23E-05	4.70E-05
Hexane (isomers)	1.36E-03	1.50E-03	1.47E-03	1.61E-03	Diflufenican	1.09E-11	1.22E-11	1.09E-11	1.22E-11
Hydrocarbons, aromatic	1.92E-04	2.09E-04	1.97E-04	2.14E-04	Diflufenopyr-sodium	8.42E-13	9.36E-13	8.42E-13	9.36E-13
Chloramine	1.00E-08	1.11E-08	1.00E-08	1.11E-08	Dichlorprop-P	1.13E-11	1.25E-11	1.13E-11	1.25E-11
Chloroacetic acid	1.03E-07	1.14E-07	1.03E-07	1.14E-07	Dimethachlor	7.26E-09	8.07E-09	7.26E-09	8.07E-09
Chlorosilane, trimethyl-	9.60E-09	1.06E-08	9.60E-09	1.06E-08	Dimethazone	2.97E-09	3.30E-09	2.97E-09	3.30E-09
Chlorosulfonic acid	6.82E-09	7.56E-09	6.82E-09	7.56E-09	Dimethenamid	3.96E-11	4.40E-11	3.96E-11	4.40E-11
iso-Butane	7.37E-04	8.15E-04	7.39E-04	8.17E-04	Dimethoate	2.58E-11	2.87E-11	2.58E-11	2.87E-11
iso-Butanol	4.39E-09	4.87E-09	4.39E-09	4.87E-09	Diquat	3.30E-09	3.66E-09	3.30E-09	3.66E-09
iso-Pentane	1.13E-05	1.22E-05	1.18E-05	1.27E-05	Dithianon	2.48E-12	2.76E-12	2.48E-12	2.76E-12
Isoprene	7.48E-07	8.31E-07	7.48E-07	8.31E-07	Diuron	2.26E-07	2.51E-07	2.26E-07	2.51E-07
Isopropanol	2.20E-05	2.44E-05	2.45E-05	2.69E-05	Endosulfan	8.77E-06	9.75E-06	8.77E-06	9.75E-06
Isopropylamine	2.36E-09	2.62E-09	2.36E-09	2.62E-09	Endothall	7.45E-11	8.28E-11	7.45E-11	8.28E-11
Lactic acid	4.54E-09	5.04E-09	4.54E-09	5.04E-09	Epoxiconazole	3.24E-12	3.60E-12	3.24E-12	3.60E-12
Mercaptan (unspecified)	6.72E-05	7.46E-05	7.30E-05	8.04E-05	Esfenvalerate	1.45E-10	1.61E-10	1.45E-10	1.61E-10
meta-Cresol	1.96E-10	2.19E-10	3.75E-10	3.97E-10	Ethalfluralin	2.42E-09	2.69E-09	2.42E-09	2.69E-09
Methacrylate	5.36E-08	5.94E-08	5.37E-08	5.95E-08	Ethephon	3.07E-07	3.41E-07	3.07E-07	3.41E-07
Methanesulfonic acid	5.64E-09	6.26E-09	5.64E-09	6.26E-09	Ethofumesate	8.16E-12	9.07E-12	8.16E-12	9.07E-12
Methanol	2.36E-04	2.58E-04	2.64E-04	2.86E-04	Fenbuconazole	6.49E-13	7.21E-13	6.49E-13	7.21E-13
Methyl acetate	7.10E-10	7.89E-10	4.76E-06	4.76E-06	Fenoxaprop	1.27E-07	1.41E-07	1.27E-07	1.41E-07
Methyl amine	8.38E-09	9.31E-09	8.38E-09	9.31E-09	Fenoxaprop ethyl ester	6.00E-17	6.67E-17	6.00E-17	6.67E-17
Methyl borate	1.57E-09	1.75E-09	1.57E-09	1.75E-09	Fenoxaprop-p-ethyl	2.37E-17	2.63E-17	2.37E-17	2.63E-17

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
Methyl cyclopentane	2.02E-07	2.18E-07	2.10E-07	2.26E-07	Fenpiclonil	8.80E-09	9.32E-09	8.80E-09	9.32E-09
Methyl formate	1.14E-09	1.26E-09	1.14E-09	1.26E-09	Fenpropidin	1.03E-11	1.15E-11	1.03E-11	1.15E-11
Methyl lactate	4.98E-09	5.53E-09	4.98E-09	5.53E-09	Fenpropimorph	2.44E-11	2.71E-11	2.44E-11	2.71E-11
Methyl methacrylate (MMA)	8.81E-09	9.83E-09	3.52E-06	3.52E-06	Fipronil	8.80E-07	9.78E-07	8.80E-07	9.78E-07
Methyl tert-butylether	2.37E-05	2.62E-05	2.37E-05	2.62E-05	Florasulam	9.34E-18	1.04E-17	9.34E-18	1.04E-17
Monoethanolamine	2.86E-06	3.17E-06	2.86E-06	3.17E-06	Fluazifop-p-butyl	4.41E-08	4.90E-08	4.41E-08	4.90E-08
n-Butyl acetate	3.82E-15	4.22E-15	3.62E-11	3.62E-11	Flucarbazone sodium salt	6.07E-19	6.74E-19	6.07E-19	6.74E-19
Nitrobenzene	3.21E-08	3.56E-08	3.21E-08	3.56E-08	Fludioxonil	4.71E-17	5.23E-17	4.71E-17	5.23E-17
NMVOC (unspecified)	2.65E-01	2.92E-01	2.83E-01	3.11E-01	Flufenacet	1.02E-10	1.13E-10	1.02E-10	1.13E-10
Nonane	9.05E-10	9.77E-10	9.42E-10	1.01E-09	Flumetsulam	2.53E-11	2.81E-11	2.53E-11	2.81E-11
Octane	2.57E-05	2.82E-05	3.88E-05	4.13E-05	Flumiclorac-pentyl	4.08E-11	4.53E-11	4.08E-11	4.53E-11
o-Nitrotoluene	2.65E-09	2.94E-09	2.65E-09	2.94E-09	Flumioxazin	7.40E-08	8.23E-08	7.40E-08	8.23E-08
para-Cresol	1.94E-10	2.17E-10	3.71E-10	3.93E-10	Flupyrsulfuron-methyl	9.42E-19	1.05E-18	9.42E-19	1.05E-18
Pentane (n-pentane)	2.22E-02	2.46E-02	2.48E-02	2.73E-02	Fluquinconazole	5.64E-13	6.27E-13	5.64E-13	6.27E-13
Phenol (hydroxy benzene)	7.25E-04	7.26E-04	7.26E-04	7.27E-04	Fluroxypyr	7.45E-13	8.28E-13	7.45E-13	8.28E-13
Propane	8.31E-03	9.14E-03	1.42E-02	1.51E-02	Flurtamone	6.58E-12	7.31E-12	6.58E-12	7.31E-12
Propene (propylene)	5.42E-04	5.63E-04	7.39E-04	7.61E-04	Flusilazole	2.27E-12	2.52E-12	2.27E-12	2.52E-12
Propionaldehyde	7.08E-05	7.86E-05	7.08E-05	7.86E-05	Fomesafen	5.23E-07	5.81E-07	5.23E-07	5.81E-07
Propionic acid (propane acid)	3.51E-06	3.88E-06	3.51E-06	3.88E-06	Foramsulfuron	1.58E-13	1.75E-13	1.58E-13	1.75E-13
Propylamine	1.30E-09	1.44E-09	1.30E-09	1.44E-09	Fosetyl-aluminium	1.99E-16	2.21E-16	1.99E-16	2.21E-16
Propylene glycol methyl ether acetate	3.65E-07	4.07E-07	6.96E-07	7.38E-07	Fungicides, unspecified	3.89E-13	4.32E-13	3.89E-13	4.32E-13
Propylene oxide	1.13E-06	1.25E-06	1.13E-06	1.25E-06	Glufosinate	5.21E-12	5.79E-12	5.21E-12	5.79E-12
Pyridine	3.50E-11	3.89E-11	4.52E-11	4.91E-11	Glyphosate	1.29E-04	1.43E-04	1.29E-04	1.43E-04
Styrene	3.99E-06	4.43E-06	4.58E-06	5.02E-06	Glyphosate-trimesium	3.16E-06	3.51E-06	3.16E-06	3.51E-06
t-Butylamine	5.33E-09	5.92E-09	5.33E-09	5.92E-09	Chloridazon	6.29E-16	6.99E-16	6.29E-16	6.99E-16
Terpenes	7.01E-06	7.79E-06	7.01E-06	7.79E-06	Chlorimuron-ethyl	1.49E-07	1.65E-07	1.49E-07	1.65E-07
Toluene (methyl benzene)	1.96E-02	2.18E-02	2.06E-02	2.28E-02	Chlormequat	2.62E-09	2.91E-09	2.62E-09	2.91E-09

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
trans-2-Butene	4.37E-07	4.72E-07	4.55E-07	4.90E-07	Chlorothalonil	1.17E-07	1.29E-07	1.17E-07	1.29E-07
trans-2-Pentene	1.08E-06	1.17E-06	1.13E-06	1.21E-06	Chlorpyriphos	2.56E-06	2.84E-06	2.56E-06	2.84E-06
Trimethylamine	1.48E-09	1.64E-09	1.48E-09	1.64E-09	Chlorsulfuron	9.71E-18	1.08E-17	9.71E-18	1.08E-17
Vinyl acetat	0.00E+00	0.00E+00	6.20E-06	6.20E-06	Chlortoluron	7.97E-12	8.86E-12	7.97E-12	8.86E-12
Xylene (dimethyl benzene)	4.51E-03	5.05E-03	1.35E-02	1.41E-02	Choline chloride	1.34E-15	1.49E-15	1.34E-15	1.49E-15
Xylene (meta-Xylene; 1,3-Dimethylbenzene)	4.31E-06	4.67E-06	4.31E-06	4.68E-06	Imazamox	6.38E-08	7.09E-08	6.38E-08	7.09E-08
Xylene (ortho-Xylene; 1,2-Dimethylbenzene)	9.31E-07	1.03E-06	9.32E-07	1.03E-06	Imazapyr	2.11E-14	2.34E-14	2.11E-14	2.34E-14
Hydrocarbons (unspecified)	3.13E-03	3.18E-03	3.80E-03	3.85E-03	Imazaquin	1.94E-10	2.16E-10	1.94E-10	2.16E-10
Methane	4.94E-01	5.48E-01	1.08E+00	1.14E+00	Imazethapyr	1.59E-07	1.77E-07	1.59E-07	1.77E-07
Methane (biotic)	2.01E-01	2.24E-01	2.53E-01	2.76E-01	Imidacloprid	8.61E-07	9.57E-07	8.61E-07	9.57E-07
VOC (unspecified)	8.88E-05	8.88E-05	8.88E-05	8.88E-05	Iodosulfuron	3.76E-14	4.18E-14	3.76E-14	4.18E-14
Other emissions to air	1.52E+03	1.69E+03	3.31E+03	3.49E+03	Iodosulfuron-methyl-sodium	5.88E-19	6.53E-19	5.88E-19	6.53E-19
Carbonyl sulfide	7.06E-07	7.84E-07	7.06E-07	7.84E-07	loxynil	1.43E-11	1.59E-11	1.43E-11	1.59E-11
Clean gas	4.85E+00	5.38E+00	2.28E+01	2.33E+01	Iprodione	3.25E-09	3.61E-09	3.25E-09	3.61E-09
Exhaust	1.03E+03	1.15E+03	2.52E+03	2.64E+03	Isoproturon	1.31E-10	1.46E-10	1.31E-10	1.46E-10
Isocyanic acid	5.31E-07	5.87E-07	5.31E-07	5.87E-07	Isoxaflutole	2.53E-12	2.81E-12	2.53E-12	2.81E-12
Total organic carbon	1.78E-08	1.97E-08	1.78E-08	1.97E-08	Kresoxim-methyl	3.85E-12	4.28E-12	3.85E-12	4.28E-12
Unused primary energy from solar energy	2.18E+02	2.43E+02	4.44E+02	4.69E+02	Lactofen	1.96E-10	2.18E-10	1.96E-10	2.18E-10
Unused primary energy from wind power	0.00E+00	0.00E+00	0.00E+00	0.00E+00	Lambda cyhalothrin	2.57E-08	2.86E-08	2.57E-08	2.86E-08
Used air	6.31E+00	7.02E+00	5.92E+01	5.99E+01	Linuron	3.46E-06	3.74E-06	3.46E-06	3.74E-06
Waste heat	0.00E+00	0.00E+00	0.00E+00	0.00E+00	Malathion	3.51E-07	3.90E-07	3.51E-07	3.90E-07
Water	2.62E+02	2.91E+02	2.62E+02	2.91E+02	Mancozeb	1.52E-07	1.68E-07	1.52E-07	1.68E-07
Particles to air	5.89E-01	6.53E-01	7.77E-01	8.42E-01	MCPA	4.51E-12	5.02E-12	4.51E-12	5.02E-12
Aluminium oxide (dust)	1.33E-09	1.48E-09	3.79E-07	3.79E-07	MCPB	1.20E-12	1.33E-12	1.20E-12	1.33E-12
Dust (> PM10)	1.57E-01	1.75E-01	1.91E-01	2.08E-01	Mecoprop	5.55E-16	6.16E-16	5.55E-16	6.16E-16
Dust (PM10)	9.35E-04	9.80E-04	3.02E-03	3.06E-03	Mecoprop-P	7.40E-12	8.22E-12	7.40E-12	8.22E-12

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
Dust (PM2.5 - PM10)	3.56E-01	3.95E-01	4.64E-01	5.03E-01	Mefenpyr	1.13E-13	1.25E-13	1.13E-13	1.25E-13
Dust (PM2.5)	7.34E-02	8.13E-02	1.19E-01	1.27E-01	Mefenpyr-diethyl	4.74E-17	5.27E-17	4.74E-17	5.27E-17
Ethyl cellulose	1.84E-07	2.05E-07	1.84E-07	2.05E-07	Mesosulfuron-methyl (prop)	3.24E-18	3.60E-18	3.24E-18	3.60E-18
Metals (unspecified)	1.69E-06	1.71E-06	1.90E-06	1.93E-06	Mesotrione	6.84E-12	7.60E-12	6.84E-12	7.60E-12
Silicon dioxide (silica)	1.97E-07	2.20E-07	3.97E-07	4.20E-07	Metalexyl	4.22E-08	4.69E-08	4.22E-08	4.69E-08
Silicon dust	1.01E-03	1.12E-03	1.01E-03	1.12E-03	Metaldehyde	1.87E-08	2.03E-08	1.87E-08	2.03E-08
Wood (dust)	0.00E+00	0.00E+00	9.10E-14	9.10E-14	Metamitron	3.10E-11	3.45E-11	3.10E-11	3.45E-11
Pesticides to air	1.26E-05	1.40E-05	1.76E-05	1.90E-05	Metam-sodium	1.11E-07	1.24E-07	1.11E-07	1.24E-07
2,4-Dichlorophenoxyacetic acid (2,4-D)	2.22E-07	2.46E-07	2.22E-07	2.46E-07	Metazachlor	1.71E-08	1.90E-08	1.71E-08	1.90E-08
Acephate	2.36E-08	2.62E-08	2.36E-08	2.62E-08	Metconazole	7.02E-10	7.80E-10	7.02E-10	7.80E-10
Acetochlor	4.65E-15	5.16E-15	5.80E-13	5.80E-13	Metolachlor	2.60E-05	2.82E-05	2.60E-05	2.82E-05
Acifluorfen	3.24E-09	3.60E-09	3.24E-09	3.60E-09	Metosulam	1.86E-18	2.06E-18	1.86E-18	2.06E-18
Alachlor	2.29E-08	2.54E-08	2.29E-08	2.54E-08	Metribuzin	5.15E-07	5.72E-07	5.15E-07	5.72E-07
Atrazine	6.54E-08	7.31E-08	1.44E-07	1.52E-07	Metsulfuron-methyl	8.96E-08	9.96E-08	8.96E-08	9.96E-08
Azoxystrobin	1.07E-08	1.19E-08	1.07E-08	1.19E-08	MSMA	7.51E-08	8.34E-08	7.51E-08	8.34E-08
Benomyl	1.27E-07	1.42E-07	2.73E-07	2.88E-07	Napropamide	2.76E-08	2.99E-08	2.76E-08	2.99E-08
Bentazone	1.25E-08	1.38E-08	1.28E-08	1.41E-08	Nicosulfuron	1.16E-12	1.29E-12	1.16E-12	1.29E-12
Carbaryl	2.70E-09	3.00E-09	2.70E-09	3.00E-09	Orbencarb	2.88E-08	3.20E-08	2.88E-08	3.20E-08
Carbofuran	2.59E-09	2.90E-09	6.93E-09	7.24E-09	Oxydemeton-methyl	2.63E-12	2.92E-12	2.63E-12	2.92E-12
Carfentrazone-ethyl	2.97E-10	3.30E-10	2.97E-10	3.30E-10	Paraquat	6.87E-08	7.63E-08	6.87E-08	7.63E-08
Clethodim	1.60E-08	1.78E-08	1.60E-08	1.78E-08	Parathion-ethyl	7.20E-11	8.00E-11	7.20E-11	8.00E-11
Cloransulam-methyl	2.82E-09	3.13E-09	2.82E-09	3.13E-09	Parathion-methyl	1.57E-10	1.74E-10	1.57E-10	1.74E-10
Cyfluthrin	5.64E-10	6.27E-10	5.64E-10	6.27E-10	Pendimethalin	3.88E-06	4.31E-06	3.88E-06	4.31E-06
Cyhalothrin, gamma-	6.48E-09	7.20E-09	6.48E-09	7.20E-09	Permethrin	1.28E-10	1.43E-10	1.28E-10	1.43E-10
Cypermethrin	1.76E-13	1.97E-13	4.59E-13	4.81E-13	Pesticides, unspecified	3.81E-06	4.23E-06	3.81E-06	4.23E-06
Cyprodinil (CGA-219417)	3.97E-12	4.44E-12	1.03E-11	1.08E-11	Phenmedipham	5.68E-12	6.32E-12	5.68E-12	6.32E-12
Deltamethrin	5.74E-09	6.33E-09	6.19E-09	6.78E-09	Picloram	1.21E-18	1.35E-18	1.21E-18	1.35E-18

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
Dicamba	1.81E-09	2.01E-09	1.81E-09	2.01E-09	Picoxystrobin	1.36E-16	1.52E-16	1.36E-16	1.52E-16
Diflubenzuron	2.97E-10	3.30E-10	2.97E-10	3.30E-10	Pirimicarb	5.89E-09	5.92E-09	5.89E-09	5.92E-09
Diflufenican	9.25E-13	1.04E-12	2.41E-12	2.52E-12	Primsulfuron	5.26E-13	5.85E-13	5.26E-13	5.85E-13
Dimethenamid	9.22E-16	1.02E-15	1.15E-13	1.15E-13	Procymidone	1.16E-09	1.29E-09	1.16E-09	1.29E-09
Dimethoate	3.83E-13	4.26E-13	5.14E-13	5.57E-13	Profenos	1.17E-07	1.30E-07	1.17E-07	1.30E-07
Esfenvalerate	3.38E-09	3.75E-09	3.38E-09	3.75E-09	Prohexadione-calcium	7.32E-19	8.13E-19	7.32E-19	8.13E-19
Ethephon	4.41E-14	4.93E-14	1.15E-13	1.20E-13	Prochloraz	6.09E-12	6.77E-12	6.09E-12	6.77E-12
Fenoxaprop	4.42E-09	4.91E-09	4.42E-09	4.91E-09	Prometryne	6.27E-08	6.97E-08	6.27E-08	6.97E-08
Fenvalerate	1.26E-12	1.36E-12	2.41E-12	2.50E-12	Propiconazole	1.53E-10	1.70E-10	1.53E-10	1.70E-10
Fipronil	3.16E-17	3.52E-17	3.95E-15	3.95E-15	Propoxycarbazone-sodium (prop)	4.06E-18	4.51E-18	4.06E-18	4.51E-18
Fluazifop-p-butyl	6.34E-09	7.04E-09	6.34E-09	7.04E-09	Prosulfuron	4.07E-13	4.52E-13	4.07E-13	4.52E-13
Flufenacet	2.38E-09	2.64E-09	2.38E-09	2.64E-09	Prothioconazol	9.19E-10	1.02E-09	9.19E-10	1.02E-09
Flumetsulam	5.56E-10	6.18E-10	5.56E-10	6.18E-10	Pyraclostrobin	3.54E-10	3.93E-10	3.54E-10	3.93E-10
Flumiclorac-pentyl	9.52E-10	1.06E-09	9.52E-10	1.06E-09	Pyrithiobac-sodium salt	4.20E-09	4.66E-09	4.20E-09	4.66E-09
Flumioxazin	9.63E-09	1.07E-08	9.63E-09	1.07E-08	Quinoxyfen	3.55E-17	3.94E-17	3.55E-17	3.94E-17
Glyphosate	7.21E-06	8.01E-06	7.29E-06	8.09E-06	Quizalofop-ethyl	1.96E-10	2.18E-10	1.96E-10	2.18E-10
Chlorimuron-ethyl	5.41E-09	6.01E-09	5.41E-09	6.01E-09	Quizalofop-P	1.67E-10	1.85E-10	1.67E-10	1.85E-10
Chlormequat-chloride	1.45E-11	1.63E-11	3.79E-11	3.96E-11	Rimsulfuron	5.26E-13	5.85E-13	5.26E-13	5.85E-13
Chlorpyriphos	1.08E-07	1.20E-07	1.08E-07	1.20E-07	Sethoxydim	8.54E-10	9.49E-10	8.54E-10	9.49E-10
Imazamox	1.42E-09	1.58E-09	1.42E-09	1.58E-09	Silthiofam	5.45E-17	6.06E-17	5.45E-17	6.06E-17
Imazaquin	4.54E-09	5.04E-09	4.54E-09	5.04E-09	Simazine	1.06E-11	1.18E-11	1.06E-11	1.18E-11
Imazethapyr	9.39E-09	1.04E-08	9.39E-09	1.04E-08	Spiroxamine	1.86E-11	2.07E-11	1.86E-11	2.07E-11
Imidacloprid	8.81E-14	9.86E-14	2.30E-13	2.40E-13	Sulfentrazone	7.66E-07	8.51E-07	7.66E-07	8.51E-07
Ioxynil	2.86E-12	3.21E-12	7.47E-12	7.81E-12	Sulfosulfuron	1.46E-17	1.62E-17	1.46E-17	1.62E-17
Isoproturon	3.74E-12	4.19E-12	9.76E-12	1.02E-11	Tebuconazole	5.48E-09	6.09E-09	5.48E-09	6.09E-09
Lactofen	4.57E-09	5.08E-09	4.57E-09	5.08E-09	Tebufenpyrad	1.89E-18	2.10E-18	1.89E-18	2.10E-18
Mancozeb	2.29E-06	2.55E-06	4.90E-06	5.17E-06	Tebupirimphos	4.42E-12	4.91E-12	4.42E-12	4.91E-12

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
MCPA	6.17E-12	6.91E-12	1.61E-11	1.68E-11	Tebutam	6.80E-08	7.38E-08	6.80E-08	7.38E-08
Mecoprop	4.19E-12	4.69E-12	1.09E-11	1.14E-11	Teflubenzuron	3.56E-10	3.94E-10	3.56E-10	3.94E-10
Methomyl	1.45E-09	1.62E-09	3.33E-09	3.50E-09	Tefluthrin	3.47E-12	3.86E-12	3.47E-12	3.86E-12
Metolachlor	7.47E-08	8.30E-08	7.47E-08	8.30E-08	Terbufos	1.67E-11	1.85E-11	1.67E-11	1.85E-11
Metribuzin	2.96E-08	3.29E-08	2.96E-08	3.29E-08	Thiamethoxam	7.21E-09	8.01E-09	7.21E-09	8.01E-09
Paraquat	1.91E-08	2.12E-08	1.91E-08	2.12E-08	Thidiazuron	7.35E-09	8.17E-09	7.35E-09	8.17E-09
Parathion-methyl	3.81E-09	4.23E-09	3.82E-09	4.24E-09	Thifensulfuron methyl	1.40E-11	1.55E-11	1.40E-11	1.55E-11
Pendimethalin	2.01E-07	2.23E-07	2.01E-07	2.23E-07	Thiodicarb	4.97E-11	5.52E-11	4.97E-11	5.52E-11
Permethrin	2.99E-09	3.32E-09	2.99E-09	3.32E-09	Thiram	2.41E-07	2.68E-07	2.41E-07	2.68E-07
Propiconazole	3.51E-09	3.90E-09	3.51E-09	3.90E-09	Tralkoxydim	8.14E-16	9.05E-16	8.14E-16	9.05E-16
Pyraclostrobin	8.26E-09	9.17E-09	8.26E-09	9.17E-09	Triadimenol	1.36E-12	1.51E-12	1.36E-12	1.51E-12
Quizalofop-ethyl	1.11E-09	1.23E-09	1.11E-09	1.23E-09	Triallate	3.28E-17	3.64E-17	3.28E-17	3.64E-17
Sethoxydim	2.39E-09	2.65E-09	2.39E-09	2.65E-09	Triasulfuron	9.71E-18	1.08E-17	9.71E-18	1.08E-17
Sodium chlorate	5.56E-08	6.17E-08	5.56E-08	6.17E-08	Tribenuron	1.42E-13	1.58E-13	1.42E-13	1.58E-13
Sulfentrazone	2.28E-08	2.53E-08	2.28E-08	2.53E-08	Tribenuron methyl	7.88E-12	8.76E-12	7.88E-12	8.76E-12
Terbufos	3.50E-16	3.89E-16	4.37E-14	4.37E-14	Tribufos	6.88E-08	7.64E-08	6.88E-08	7.64E-08
Thifensulfuron	3.25E-10	3.61E-10	3.25E-10	3.61E-10	Triclopyr	1.32E-09	1.47E-09	1.32E-09	1.47E-09
Thiodicarb	1.16E-09	1.29E-09	1.16E-09	1.29E-09	Trifloxystrobin	8.91E-12	9.90E-12	8.91E-12	9.90E-12
Thiram	1.65E-09	1.80E-09	1.86E-09	2.01E-09	Trifluralin	4.83E-06	5.36E-06	4.83E-06	5.36E-06
Trifloxystrobin	2.08E-10	2.31E-10	2.08E-10	2.31E-10	Trinexapac-ethyl	1.14E-11	1.27E-11	1.14E-11	1.27E-11
Trifluralin	1.97E-06	2.20E-06	4.01E-06	4.24E-06	Vinclozolin	3.87E-10	4.30E-10	3.87E-10	4.30E-10
Trichlorfon	1.53E-09	1.72E-09	4.09E-09	4.27E-09	Zeta-cypermethrin	5.87E-11	6.52E-11	5.87E-11	6.52E-11
Zeta-cypermethrin	1.37E-09	1.52E-09	1.37E-09	1.52E-09	Different pollutants	7.06E-04	7.33E-04	7.06E-04	7.33E-04
Radioactive emissions to air	2.14E-06	2.35E-06	2.14E-06	2.35E-06	Emissions to industrial soil	1.69E-02	1.86E-02	3.34E-02	3.51E-02
Thorium (Th230)	5.03E-13	5.63E-13	1.39E-12	1.45E-12	Heavy metals to industrial soil	3.68E-03	4.07E-03	3.68E-03	4.07E-03
Thorium (Th232)	9.46E-07	1.05E-06	9.46E-07	1.05E-06	Antimony	5.50E-09	6.11E-09	5.51E-09	6.12E-09
Uranium	3.38E-08	3.75E-08	3.38E-08	3.75E-08	Arsenic	6.27E-08	6.97E-08	6.27E-08	6.97E-08

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
Uranium (total)	1.16E-06	1.26E-06	1.16E-06	1.26E-06	Arsenic (+V)	5.58E-08	6.15E-08	8.67E-08	9.24E-08
Emissions to fresh water	3.85E+05	4.30E+05	8.60E+05	9.05E+05	Cadmium	2.38E-08	2.64E-08	5.03E-08	5.29E-08
Analytical measures to fresh water	9.60E-01	1.06E+00	1.12E+00	1.22E+00	Cobalt	4.69E-08	5.21E-08	5.22E-08	5.74E-08
Adsorbable organic halogen compounds (AOX)	1.03E-04	1.15E-04	5.17E-04	5.28E-04	Copper	3.29E-06	3.61E-06	3.71E-06	4.04E-06
Biological oxygen demand (BOD)	1.09E-01	1.19E-01	1.10E-01	1.20E-01	Chromium	1.52E-06	1.68E-06	1.55E-06	1.72E-06
DOC, Dissolved Organic Carbon	1.76E-02	1.96E-02	1.76E-02	1.96E-02	Chromium (+III)	1.43E-09	1.59E-09	2.74E-09	2.90E-09
Chemical oxygen demand (COD)	3.02E-01	3.33E-01	4.55E-01	4.87E-01	Chromium (+VI)	4.03E-06	4.42E-06	4.03E-06	4.42E-06
Nitrogenous Matter (unspecified, as N)	3.44E-05	3.82E-05	2.95E-04	2.99E-04	Iron	3.62E-03	4.01E-03	3.63E-03	4.01E-03
Solids (dissolved)	4.77E-01	5.30E-01	4.78E-01	5.31E-01	Lead	6.70E-07	7.42E-07	8.87E-07	9.60E-07
Total dissolved organic bound carbon (TOC)	1.79E-02	1.92E-02	1.79E-02	1.92E-02	Manganese	1.14E-05	1.26E-05	1.14E-05	1.27E-05
Total organic bound carbon (TOC)	3.61E-02	3.94E-02	3.65E-02	3.98E-02	Mercury	3.52E-10	3.91E-10	1.58E-09	1.61E-09
ecoinvent long-term to fresh water	2.83E+00	3.13E+00	2.83E+00	3.13E+00	Molybdenum	7.71E-09	8.57E-09	7.71E-09	8.57E-09
Aluminium	6.88E-02	7.65E-02	6.88E-02	7.65E-02	Nickel	2.20E-07	2.44E-07	2.83E-07	3.06E-07
Ammonium, ion	1.65E-05	1.83E-05	1.65E-05	1.83E-05	Selenium	5.50E-08	6.11E-08	5.50E-08	6.11E-08
Antimony	8.40E-05	9.29E-05	8.40E-05	9.29E-05	Silver	2.75E-10	3.06E-10	2.75E-10	3.06E-10
Arsenic, ion	4.65E-05	5.17E-05	4.65E-05	5.17E-05	Titanium	1.04E-06	1.16E-06	1.04E-06	1.16E-06
Barium	5.29E-04	5.82E-04	5.29E-04	5.82E-04	Vanadium	2.75E-09	3.06E-09	2.75E-09	3.06E-09
Beryllium	3.26E-05	3.60E-05	3.26E-05	3.60E-05	Zinc	3.20E-05	3.54E-05	3.23E-05	3.57E-05
Biological oxygen demand, BSB5 (Ecoinvent)	2.39E-02	2.65E-02	2.39E-02	2.65E-02	Inorganic emissions to industrial soil	1.12E-02	1.24E-02	2.77E-02	2.89E-02
Boron	3.37E-03	3.73E-03	3.37E-03	3.73E-03	Aluminium	2.66E-04	2.94E-04	2.70E-04	2.98E-04
Bromine	1.68E-05	1.85E-05	1.68E-05	1.85E-05	Ammonia	2.07E-03	2.30E-03	2.22E-03	2.45E-03
Cadmium, ion	2.12E-05	2.35E-05	2.12E-05	2.35E-05	Barium	1.32E-04	1.46E-04	1.32E-04	1.46E-04
Calcium, ion	1.33E-01	1.47E-01	1.33E-01	1.47E-01	Beryllium	3.11E-15	3.45E-15	6.31E-15	6.65E-15
Cobalt	5.78E-04	6.37E-04	5.78E-04	6.37E-04	Boron	1.49E-06	1.66E-06	1.49E-06	1.66E-06
COD, Chemical Oxygen Demand	4.77E-02	5.30E-02	4.77E-02	5.30E-02	Bromide	5.50E-08	6.11E-08	5.54E-08	6.15E-08
Copper	3.44E-03	3.81E-03	3.44E-03	3.81E-03	Calcium	2.09E-03	2.32E-03	1.71E-02	1.74E-02

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
DOC, Dissolved Organic Carbon	3.04E-02	3.37E-02	3.04E-02	3.37E-02	Elemental carbon	2.44E-08	2.71E-08	2.44E-08	2.71E-08
Fluoride	1.61E-02	1.79E-02	1.61E-02	1.79E-02	Fluoride	1.62E-05	1.79E-05	1.71E-05	1.88E-05
Hydrogen sulphide	3.72E-04	4.14E-04	3.72E-04	4.14E-04	Chloride	1.38E-03	1.53E-03	2.30E-03	2.46E-03
Chloride	4.26E-02	4.70E-02	4.26E-02	4.70E-02	Chlorine	3.31E-03	3.60E-03	3.31E-03	3.60E-03
Chromium (+VI)	5.46E-04	6.03E-04	5.46E-04	6.03E-04	Lithium	3.58E-09	3.98E-09	3.58E-09	3.98E-09
Iodide	3.44E-11	3.82E-11	3.44E-11	3.82E-11	Magnesium	2.67E-04	2.97E-04	3.15E-04	3.44E-04
Iron	8.47E-02	9.37E-02	8.47E-02	9.37E-02	Nitrate	4.13E-06	4.59E-06	4.13E-06	4.59E-06
Lead	1.67E-04	1.85E-04	1.67E-04	1.85E-04	Nitric acid	1.82E-11	2.03E-11	3.61E-11	3.82E-11
Magnesium	5.35E-02	5.95E-02	5.35E-02	5.95E-02	Nitrogen	1.72E-07	1.91E-07	1.73E-07	1.92E-07
Manganese	1.75E-02	1.93E-02	1.75E-02	1.93E-02	Organic carbon	5.78E-08	6.42E-08	5.78E-08	6.42E-08
Mercury	1.01E-06	1.12E-06	1.01E-06	1.12E-06	Phosphorus	1.62E-04	1.80E-04	1.79E-04	1.97E-04
Metal ions (unspecific)	1.15E-03	1.26E-03	1.15E-03	1.26E-03	Potassium	4.71E-04	5.23E-04	5.24E-04	5.76E-04
Molybdenum	1.25E-04	1.39E-04	1.25E-04	1.39E-04	Silicon	1.80E-05	2.00E-05	1.80E-05	2.00E-05
Nickel, ion	6.28E-04	6.97E-04	6.28E-04	6.97E-04	Sodium	3.05E-04	3.39E-04	3.05E-04	3.39E-04
Nitrate	1.23E-02	1.35E-02	1.23E-02	1.35E-02	Sodium	2.87E-04	3.19E-04	5.23E-04	5.55E-04
Nitrite	8.97E-07	9.96E-07	8.97E-07	9.96E-07	Strontium	2.68E-06	2.96E-06	3.50E-06	3.79E-06
Nitrogen organic bound	2.69E-05	2.99E-05	2.69E-05	2.99E-05	Sulphate	4.99E-05	5.54E-05	5.39E-05	5.94E-05
Phosphate	4.40E-02	4.85E-02	4.40E-02	4.85E-02	Sulphide	2.58E-04	2.87E-04	2.79E-04	3.07E-04
Potassium	7.89E-02	8.67E-02	7.89E-02	8.67E-02	Sulphur	1.60E-04	1.77E-04	1.60E-04	1.77E-04
Scandium	5.26E-05	5.81E-05	5.26E-05	5.81E-05	Organic emissions to industrial soil	9.55E-04	1.06E-03	9.55E-04	1.06E-03
Selenium	9.79E-05	1.08E-04	9.79E-05	1.08E-04	Acetic acid	2.88E-07	3.20E-07	3.16E-07	3.48E-07
Silicon	2.90E-01	3.22E-01	2.90E-01	3.22E-01	Carbon (unspecified)	8.06E-04	8.92E-04	8.06E-04	8.92E-04
Silver	4.59E-06	5.09E-06	4.59E-06	5.09E-06	Hydrocarbons (unspecified)	2.69E-10	3.01E-10	5.33E-10	5.64E-10
Sodium	2.14E-01	2.36E-01	2.14E-01	2.36E-01	Hydrocarbons, unspecified	1.43E-08	1.59E-08	1.43E-08	1.59E-08
Solids (suspended)	3.49E-01	3.84E-01	3.49E-01	3.84E-01	Methanol	2.06E-08	2.29E-08	2.26E-08	2.49E-08
Strontium	4.83E-03	5.32E-03	4.83E-03	5.32E-03	Oil (unspecified)	1.45E-04	1.61E-04	1.45E-04	1.61E-04
Sulphate	1.25E+00	1.37E+00	1.25E+00	1.37E+00	Oils, non-fossil	3.08E-06	3.43E-06	3.08E-06	3.43E-06

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
Thallium	8.34E-06	9.23E-06	8.34E-06	9.23E-06	PAH, polycyclic aromatic hydrocarbons	1.08E-08	1.19E-08	1.08E-08	1.19E-08
Tin, ion	1.78E-04	1.97E-04	1.78E-04	1.97E-04	Pentachlorophenol (PCP)	1.54E-11	1.71E-11	1.54E-11	1.71E-11
Titanium, ion	2.63E-02	2.92E-02	2.63E-02	2.92E-02	Polycyclic aromatic hydrocarbons (unspecified)	3.28E-08	3.66E-08	6.56E-08	6.94E-08
TOC, Total Organic Carbon	2.02E-02	2.24E-02	2.02E-02	2.24E-02	Other emissions to industrial soil	1.00E-03	1.11E-03	1.00E-03	1.11E-03
Total organic carbon, TOC (Ecoinvent)	1.02E-02	1.13E-02	1.02E-02	1.13E-02	Pesticides to industrial soil	1.82E-06	2.02E-06	1.82E-06	2.02E-06
Tungsten	1.06E-04	1.17E-04	1.06E-04	1.17E-04	Glyphosate	1.82E-06	2.02E-06	1.82E-06	2.02E-06
Vanadium, ion	1.28E-03	1.42E-03	1.28E-03	1.42E-03	Bark	1.33E-08	1.48E-08	1.33E-08	1.48E-08
Zinc, ion	5.42E-03	6.00E-03	5.42E-03	6.00E-03	Different pollutants	1.00E-03	1.10E-03	1.00E-03	1.10E-03
Heavy metals to fresh water	2.13E-01	2.38E-01	5.70E-01	5.95E-01					
Antimony	2.06E-05	2.27E-05	2.06E-05	2.27E-05					
Arsenic	2.00E-10	2.07E-10	2.53E-10	2.60E-10					
Arsenic (+V)	2.62E-04	2.90E-04	2.98E-04	3.25E-04					
Cadmium	8.58E-05	9.48E-05	9.60E-05	1.05E-04					
Cobalt	1.90E-06	2.09E-06	1.96E-06	2.15E-06					
Copper	4.46E-05	4.93E-05	8.47E-05	8.94E-05					
Heavy metals to water (unspecified)	5.75E-11	6.41E-11	1.24E-09	1.25E-09					
Chromium	7.56E-05	8.31E-05	1.14E-04	1.21E-04					
Chromium (+III)	1.55E-06	1.75E-06	1.14E-05	1.16E-05					
Chromium (+VI)	1.45E-04	1.61E-04	1.46E-04	1.62E-04					
Iron	2.10E-01	2.34E-01	5.57E-01	5.81E-01					
Lead	1.29E-04	1.43E-04	2.04E-04	2.19E-04					
Manganese	2.40E-04	2.67E-04	4.39E-03	4.42E-03					
Mercury	3.29E-06	3.61E-06	4.78E-06	5.10E-06					
Molybdenum	5.57E-05	6.21E-05	1.36E-04	1.43E-04					
Nickel	1.59E-03	1.75E-03	1.67E-03	1.83E-03					
Scandium	9.71E-07	1.07E-06	9.71E-07	1.07E-06					
Selenium	1.10E-05	1.23E-05	2.05E-05	2.17E-05					

Flows	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services	Flow	CETRIS basic boards	CETRIS custom made	CETRIS panited	CETRIS painted with other services
Silver	1.47E-06	1.63E-06	1.61E-06	1.77E-06					
Tantalum	1.07E-12	1.19E-12	1.76E-12	1.88E-12					
Thallium	4.80E-08	5.28E-08	4.84E-08	5.32E-08					
Tin	2.72E-07	3.01E-07	2.72E-07	3.02E-07					
Titanium	9.51E-05	1.06E-04	5.31E-03	5.32E-03					
Tungsten	2.36E-06	2.61E-06	2.40E-06	2.65E-06					
Vanadium	1.63E-05	1.81E-05	5.67E-04	5.68E-04					
Zinc	1.45E-04	1.61E-04	3.75E-04	3.91E-04					

14 PARAMETERS OF THE LIFE CYCLE INVENTORY ANALYSIS AND LIFE CYCLE IMPACT ASSESSMENT

14.1 PRESENTATION OF THE PARAMETERS IN TABULAR FORM

Presentation of parameters for all modules A1 to A3 with C1 to C4 and module D with required marking unassessed modules as "ND" (= module not declared) in paragraph 5.2 is shown.

14.2 PRESENTATION OF THE PARAMETERS

For each set of inventory data by using characterization factors were defined the results of indicators of impact categories. Characterizations of environmental impacts were performed using characterization factors specified in the PCR specifically.

As it is an extensive set of data that is widely available, therefore the values of each characterization factors are not listed. The calculation of characterization was carried out by software GaBi (thinkstep).

According to EN 15804+A2 the environmental impact per declared unit is reported for the following impact categories:

Impact category	Indicator	Unit
Climate change - total	Global Warming Potential total (GWP-total)	kg CO ₂ eq.
Climate change - fossil	Global Warming Potential total (GWP-fossil)	kg CO ₂ eq.
Climate change - biogenic	Global Warming Potential total (GWP-biogenic)	kg CO ₂ eq.
Climate change - land use and land use change	Global Warming Potential total (GWP-luluc)	kg CO ₂ eq.
Ozone Depletion	Depletion potential of the stratospheric ozone layer (ODP)	kg CFC 11 eq.
Acidification	Acidification potential, Accumulated Exceedance (AP)	mol H ⁺ eq.
Eutrophication aquatic freshwater	Eutrophication potential, fraction of nutrients reaching freshwater end	kg P eq.

Impact category	Indicator	Unit
	compartment (EP-freshwater)	
Eutrophication aquatic marine	Eutrophication potential, fraction of nutrients reaching freshwater end compartment (EP-marine)	kg N eq.
Eutrophication terrestrial	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	mol N eq.
Photochemical ozone formation	Formation potential of tropospheric ozone (POCP);	kg NMVOC eq.
Depletion of abiotic resources - minerals and metals	Abiotic depletion potential (ADPminerals& metals) for non-fossil resources	kg Sb eq.
Depletion of abiotic resources - fossil fuels	Abiotic depletion potential (ADP-fossil) for fossil resources	MJ, net calorific value
Water use	Water (user) deprivation potential, deprivation weighted water consumption (WDP)	m3 world eq. deprived
Particulate matter emissions	Potential incidence of disease due to PM emissions (PM)	Disease incidence
Ionising radiation, human health	Potential Human exposure efficiency relative to U235 (IR)	kBq U235 eq.
Ecotoxicity (freshwater)	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	CTUe
Human toxicity, cancer effects	Potential Comparative Toxic Unit for humans (HTP-c)	CTUh
Human toxicity, noncancer effects	Potential Comparative Toxic Unit for humans (HTP-nc)	CTUh
Land use related impacts / soil quality	Potential Soil quality index (SQP)	dimensionless

The use of resource is described by the another parameters:

- Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ),
- Use of renewable primary energy resources used as raw materials (MJ),
- Total use of renewable primary energy resources (MJ),
- Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (MJ),
- Use of non-renewable primary energy resources used as raw materials (MJ),
- Total use of non-renewable primary energy resources (MJ),
- Use of secondary material (kg),
- Use of renewable secondary fuels (MJ),
- Use of non-renewable secondary fuels (MJ)
- and Net use of freshwater (m^3).

The indicators describing waste categories are also reported by 3 parameters: Non-hazardous waste disposed (kg), Hazardous waste disposed (kg), Radioactive waste disposed (kg).

In the tables, following abbreviations are used:

- PERE: Use of renewable primary energy excluding resources used as raw materials,
- PERM: Use of renewable primary energy resources used as raw materials,
- PERT: Total use of renewable primary energy,
- PENRE: Use of non-renewable primary energy excluding resources used as raw materials,
- PENRM: Use of nonrenewable primary energy resources used as raw materials,
- PENRT: Total use of non-renewable primary energy.

Table 15 Cetris boards basic: Parameters describing environmental impact

Parameter	Unit	A1	A2	A3	C1	C2	C3	C4	D
Climate change - total	kg CO ₂ eq.	-1.92E+01	1.08E+01	9.92E-01	8.40E-01	1.05E+01	0.00E+00	1.89E+01	0.00E+00
Climate change - fossil	kg CO ₂ eq.	8.01E+02	1.07E+01	-5.59E+00	8.71E-01	1.04E+01	0.00E+00	2.05E+01	0.00E+00
Climate change - biogenic	kg CO ₂ eq.	-8.21E+02	-1.81E-02	6.59E+00	-3.83E-02	-1.76E-02	0.00E+00	-1.62E+00	0.00E+00
Climate change - land use and land use change	kg CO ₂ eq.	3.82E-01	8.73E-02	-1.13E-02	6.77E-03	8.48E-02	0.00E+00	5.90E-02	0.00E+00
Ozone Depletion	kg CFC 11 eq.	8.31E-06	1.98E-15	8.63E-13	1.53E-16	1.92E-15	0.00E+00	7.67E-14	0.00E+00
Acidification	mol H ⁺ eq.	1.32E+00	6.27E-02	2.47E-02	4.27E-03	6.04E-02	0.00E+00	1.47E-01	0.00E+00
Eutrophication aquatic freshwater	kg P eq.	1.90E-02	3.28E-05	6.76E-05	2.55E-06	3.19E-05	0.00E+00	3.53E-05	0.00E+00
Eutrophication aquatic marine	kg N eq.	3.50E-01	3.02E-02	2.33E-02	1.98E-03	2.91E-02	0.00E+00	3.78E-02	0.00E+00
Eutrophication terrestrial	mol N eq.	3.81E+00	3.35E-01	2.51E-01	2.19E-02	3.22E-01	0.00E+00	4.16E-01	0.00E+00
Photochemical ozone formation	kg NMVOC eq.	1.31E+00	5.84E-02	6.73E-02	5.54E-03	5.63E-02	0.00E+00	1.15E-01	0.00E+00
Depletion of abiotic resources - minerals and metals	kg Sb eq.	4.42E-04	8.72E-07	-1.94E-04	6.76E-08	8.47E-07	0.00E+00	1.85E-06	0.00E+00
Depletion of abiotic resources - fossil fuels	MJ, net calorific value	4.34E+03	1.44E+02	-7.12E+01	1.12E+01	1.40E+02	0.00E+00	2.69E+02	0.00E+00
Water use	m ³ world eq. deprived	3.68E+03	1.05E-01	1.98E+00	8.15E-03	1.02E-01	0.00E+00	2.14E+00	0.00E+00
Particulate matter emissions	Disease incidence	2.22E-05	2.30E-07	-4.29E-07	4.81E-08	2.28E-07	0.00E+00	1.82E-06	0.00E+00
Ionizing radiation, human health	kBq U235 eq.	2.72E+01	3.93E-02	-1.98E-02	3.05E-03	3.81E-02	0.00E+00	3.03E-01	0.00E+00
Ecotoxicity (freshwater)	CTUe	1.45E+04	1.08E+02	-3.35E+01	8.35E+00	1.05E+02	0.00E+00	1.53E+02	0.00E+00
Human toxicity, cancer effects	CTUh	3.90E-07	2.23E-09	-1.41E-09	1.73E-10	2.16E-09	0.00E+00	2.27E-08	0.00E+00
Human toxicity, noncancer effects	CTUh	7.59E-06	1.20E-07	1.48E-06	1.02E-08	1.17E-07	0.00E+00	2.51E-06	0.00E+00
Land use related impacts / soil quality	Pt	4.71E+04	5.05E+01	-9.91E+00	3.92E+00	4.90E+01	0.00E+00	5.85E+01	0.00E+00

Table 16 Cetris boards basic: Parameters describing resource use, waste and outputs flows

Parameter	Unit	A1	A2	A3	C1	C2	C3	C4	D
PERE	MJ	1.03E+04	8.32E+00	-1.48E+01	6.45E-01	8.08E+00	0.00E+00	3.53E+01	0.00E+00
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	1.03E+04	8.32E+00	-1.48E+01	6.45E-01	8.08E+00	0.00E+00	3.53E+01	0.00E+00
PENRE	MJ	4.34E+03	1.44E+02	-7.13E+01	1.12E+01	1.40E+02	0.00E+00	2.69E+02	0.00E+00
PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	4.34E+03	1.44E+02	-7.13E+01	1.12E+01	1.40E+02	0.00E+00	2.69E+02	0.00E+00
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Water	m ³	8.65E+01	9.69E-03	6.28E-03	7.52E-04	9.41E-03	0.00E+00	6.76E-02	0.00E+00
Hazardous waste disposed	kg	9.49E-06	6.68E-06	-1.96E-07	5.18E-07	6.49E-06	0.00E+00	4.10E-06	0.00E+00
Non hazardous waste disposed	kg	5.50E+00	2.29E-02	7.47E+00	1.78E-03	2.22E-02	0.00E+00	1.35E+03	0.00E+00
Radioactive waste disposed	kg	2.52E-01	2.66E-04	-2.47E-04	2.06E-05	2.59E-04	0.00E+00	3.01E-03	0.00E+00
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materilas for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy electrical	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 17 Cetris boards custom made: Parameters describing environmental impact

Parameter	Unit	A1	A2	A3	C1	C2	C3	C4	D
Climate change - total	kg CO ₂ eq.	-1.75E+01	1.20E+01	3.67E+00	8.40E-01	1.05E+01	0.00E+00	1.89E+01	0.00E+00
Climate change - fossil	kg CO ₂ eq.	8.91E+02	1.19E+01	-3.47E+00	8.71E-01	1.04E+01	0.00E+00	2.05E+01	0.00E+00
Climate change - biogenic	kg CO ₂ eq.	-9.09E+02	-2.01E-02	7.14E+00	-3.83E-02	-1.76E-02	0.00E+00	-1.62E+00	0.00E+00
Climate change - land use and land use change	kg CO ₂ eq.	4.27E-01	9.70E-02	-2.21E-03	6.77E-03	8.48E-02	0.00E+00	5.90E-02	0.00E+00
Ozone Depletion	kg CFC 11 eq.	9.20E-06	2.20E-15	9.67E-13	1.53E-16	1.92E-15	0.00E+00	7.67E-14	0.00E+00
Acidification	mol H ⁺ eq.	1.47E+00	6.96E-02	4.65E-02	4.27E-03	6.04E-02	0.00E+00	1.47E-01	0.00E+00
Eutrophication aquatic freshwater	kg P eq.	2.09E-02	3.65E-05	8.04E-05	2.55E-06	3.19E-05	0.00E+00	3.53E-05	0.00E+00
Eutrophication aquatic marine	kg N eq.	3.89E-01	3.36E-02	3.14E-02	1.98E-03	2.91E-02	0.00E+00	3.78E-02	0.00E+00
Eutrophication terrestrial	mol N eq.	4.23E+00	3.72E-01	3.40E-01	2.19E-02	3.22E-01	0.00E+00	4.16E-01	0.00E+00
Photochemical ozone formation	kg NMVOC eq.	1.45E+00	6.49E-02	9.00E-02	5.54E-03	5.63E-02	0.00E+00	1.15E-01	0.00E+00
Depletion of abiotic resources - minerals and metals	kg Sb eq.	4.90E-04	9.69E-07	-2.15E-04	6.76E-08	8.47E-07	0.00E+00	1.85E-06	0.00E+00
Depletion of abiotic resources - fossil fuels	MJ, net calorific value	4.83E+03	1.60E+02	-4.30E+01	1.12E+01	1.40E+02	0.00E+00	2.69E+02	0.00E+00
Water use	m ³ world eq. deprived	4.03E+03	1.17E-01	2.44E+00	8.15E-03	1.02E-01	0.00E+00	2.14E+00	0.00E+00
Particulate matter emissions	Disease incidence	2.46E-05	2.55E-07	-2.65E-07	4.81E-08	2.28E-07	0.00E+00	1.82E-06	0.00E+00
Ionizing radiation, human health	kBq U235 eq.	3.02E+01	4.36E-02	1.34E-02	3.05E-03	3.81E-02	0.00E+00	3.03E-01	0.00E+00
Ecotoxicity (freshwater)	CTUe	1.60E+04	1.20E+02	-1.55E+01	8.35E+00	1.05E+02	0.00E+00	1.53E+02	0.00E+00
Human toxicity, cancer effects	CTUh	4.32E-07	2.47E-09	1.06E-09	1.73E-10	2.16E-09	0.00E+00	2.27E-08	0.00E+00
Human toxicity, noncancer effects	CTUh	8.42E-06	1.33E-07	1.93E-06	1.02E-08	1.17E-07	0.00E+00	2.51E-06	0.00E+00
Land use related impacts / soil quality	Pt	5.22E+04	5.61E+01	-2.33E+00	3.92E+00	4.90E+01	0.00E+00	5.85E+01	0.00E+00

Table 18 Cetris boards custom made: Parameters describing resource use, waste and outputs flows

Parameter	Unit	A1	A2	A3	C1	C2	C3	C4	D
PERE	MJ	1.15E+04	9.24E+00	-1.21E+01	6.50E-01	8.08E+00	0.00E+00	3.53E+01	0.00E+00
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	1.15E+04	9.24E+00	-1.21E+01	6.50E-01	8.08E+00	0.00E+00	3.53E+01	0.00E+00
PENRE	MJ	4.83E+03	1.60E+02	-4.31E+01	1.12E+01	1.40E+02	0.00E+00	2.69E+02	0.00E+00
PENRM	MJ	3.66E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	4.83E+03	1.60E+02	-4.31E+01	1.12E+01	1.40E+02	0.00E+00	2.69E+02	0.00E+00
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Water	m ³	9.47E+01	1.08E-02	1.49E-02	8.00E-04	9.40E-03	0.00E+00	6.76E-02	0.00E+00
Hazardous waste disposed	kg	1.05E-05	7.42E-06	5.26E-07	5.18E-07	6.49E-06	0.00E+00	4.10E-06	0.00E+00
Non hazardous waste disposed	kg	6.12E+00	2.54E-02	1.59E+02	1.78E-03	2.22E-02	0.00E+00	1.35E+03	0.00E+00
Radioactive waste disposed	kg	2.82E-01	3.00E-04	7.25E-05	2.06E-05	2.60E-04	0.00E+00	3.00E-03	0.00E+00
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	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	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy electrical	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 19 Cetris boards painted: Parameters describing environmental impact

Parameter	Unit	A1	A2	A3	C1	C2	C3	C4	D
Climate change - total	kg CO ₂ eq.	3.03E+02	1.12E+01	6.39E+01	8.40E-01	1.05E+01	0.00E+00	1.89E+01	0.00E+00
Climate change - fossil	kg CO ₂ eq.	1.12E+03	1.11E+01	5.71E+01	8.71E-01	1.04E+01	0.00E+00	2.05E+01	0.00E+00
Climate change - biogenic	kg CO ₂ eq.	-8.20E+02	-2.28E-02	6.70E+00	-3.83E-02	-1.76E-02	0.00E+00	-1.62E+00	0.00E+00
Climate change - land use and land use change	kg CO ₂ eq.	7.27E-01	9.11E-02	1.85E-02	6.77E-03	8.48E-02	0.00E+00	5.90E-02	0.00E+00
Ozone Depletion	kg CFC 11 eq.	8.34E-06	2.07E-15	2.29E-10	1.53E-16	1.92E-15	0.00E+00	7.67E-14	0.00E+00
Acidification	mol H ⁺ eq.	2.15E+00	6.49E-02	2.21E-01	4.27E-03	6.04E-02	0.00E+00	1.47E-01	0.00E+00
Eutrophication aquatic freshwater	kg P eq.	1.98E-02	3.43E-05	1.37E-04	2.55E-06	3.19E-05	0.00E+00	3.53E-05	0.00E+00
Eutrophication aquatic marine	kg N eq.	5.09E-01	3.13E-02	9.13E-02	1.98E-03	2.91E-02	0.00E+00	3.78E-02	0.00E+00
Eutrophication terrestrial	mol N eq.	5.50E+00	3.46E-01	9.88E-01	2.19E-02	3.22E-01	0.00E+00	4.16E-01	0.00E+00
Photochemical ozone formation	kg NMVOC eq.	1.77E+00	6.05E-02	2.62E-01	5.54E-03	5.63E-02	0.00E+00	1.15E-01	0.00E+00
Depletion of abiotic resources - minerals and metals	kg Sb eq.	4.84E-04	9.10E-07	-1.89E-04	6.76E-08	8.47E-07	0.00E+00	1.85E-06	0.00E+00
Depletion of abiotic resources - fossil fuels	MJ, net calorific value	9.01E+03	1.50E+02	5.78E+02	1.12E+01	1.40E+02	0.00E+00	2.69E+02	0.00E+00
Water use	m ³ world eq. deprived	3.69E+03	1.10E-01	3.67E+00	8.15E-03	1.02E-01	0.00E+00	2.14E+00	0.00E+00
Particulate matter emissions	Disease incidence	3.57E-05	2.39E-07	1.56E-06	4.81E-08	2.28E-07	0.00E+00	1.82E-06	0.00E+00
Ionizing radiation, human health	kBq U235 eq.	5.81E+01	4.10E-02	1.12E+00	3.05E-03	3.81E-02	0.00E+00	3.03E-01	0.00E+00
Ecotoxicity (freshwater)	CTUe	1.65E+04	1.12E+02	2.38E+02	8.35E+00	1.05E+02	0.00E+00	1.53E+02	0.00E+00
Human toxicity, cancer effects	CTUh	5.09E-07	2.32E-09	2.34E-06	1.73E-10	2.16E-09	0.00E+00	2.27E-08	0.00E+00
Human toxicity, noncancer effects	CTUh	1.97E-05	1.25E-07	2.76E-04	1.02E-08	1.17E-07	0.00E+00	2.51E-06	0.00E+00
Land use related impacts / soil quality	Pt	4.84E+04	5.27E+01	4.80E+01	3.92E+00	4.90E+01	0.00E+00	5.85E+01	0.00E+00

Table 20 Cetris boards painted (without services): Parameters describing resource use, waste and outputs flows

Parameter	Unit	A1	A2	A3	C1	C2	C3	C4	D
PERE	MJ	1.12E+04	8.68E+00	5.49E+01	6.45E-01	8.08E+00	0.00E+00	3.53E+01	0.00E+00
PERM	MJ	0.00E+00							
PERT	MJ	1.12E+04	8.68E+00	5.49E+01	6.45E-01	8.08E+00	0.00E+00	3.53E+01	0.00E+00
PENRE	MJ	9.01E+03	1.51E+02	5.79E+02	1.12E+01	1.40E+02	0.00E+00	2.69E+02	0.00E+00
PENRM	MJ	3.30E+00	0.00E+00						
PENRT	MJ	9.01E+03	1.51E+02	5.79E+02	1.12E+01	1.40E+02	0.00E+00	2.69E+02	0.00E+00
Use of secondary material	kg	0.00E+00							
Use of renewable secondary fuels	MJ	0.00E+00							
Use of non-renewable secondary fuels	MJ	0.00E+00							
Water	m ³	8.79E+01	1.01E-02	1.19E-01	7.52E-04	9.41E-03	0.00E+00	6.76E-02	0.00E+00
Hazardous waste disposed	kg	1.70E-01	6.97E-06	6.14E-05	5.18E-07	6.49E-06	0.00E+00	4.10E-06	0.00E+00
Non hazardous waste disposed	kg	1.34E+01	2.39E-02	8.34E+01	1.78E-03	2.22E-02	0.00E+00	1.35E+03	0.00E+00
Radioactive waste disposed	kg	7.13E-01	2.78E-04	1.31E-02	2.06E-05	2.59E-04	0.00E+00	3.01E-03	0.00E+00
Components for reuse	kg	0.00E+00							
Material for recycling	kg	0.00E+00							
Materilas for energy recovery	kg	0.00E+00							
Exported energy electrical	MJ	0.00E+00							
Exported energy thermal	MJ	0.00E+00							

Table 21 Cetris boards painted, with other services: Parameters describing environmental impact

Parameter	Unit	A1	A2	A3	C1	C2	C3	C4	D
Climate change - total	kg CO ₂ eq.	3.05E+02	1.23E+01	6.65E+01	8.40E-01	1.05E+01	0.00E+00	1.89E+01	0.00E+00
Climate change - fossil	kg CO ₂ eq.	1.21E+03	1.23E+01	5.93E+01	8.71E-01	1.04E+01	0.00E+00	2.05E+01	0.00E+00
Climate change - biogenic	kg CO ₂ eq.	-9.09E+02	-2.07E-02	7.25E+00	-3.83E-02	-1.76E-02	0.00E+00	-1.62E+00	0.00E+00
Climate change - land use and land use change	kg CO ₂ eq.	7.71E-01	1.00E-01	2.83E-02	6.77E-03	8.48E-02	0.00E+00	5.90E-02	0.00E+00
Ozone Depletion	kg CFC 11 eq.	9.23E-06	2.27E-15	2.29E-10	1.53E-16	1.92E-15	0.00E+00	7.67E-14	0.00E+00
Acidification	mol H ⁺ eq.	2.29E+00	7.18E-02	2.43E-01	4.27E-03	6.04E-02	0.00E+00	1.47E-01	0.00E+00
Eutrophication aquatic freshwater	kg P eq.	2.17E-02	3.76E-05	1.50E-04	2.55E-06	3.19E-05	0.00E+00	3.53E-05	0.00E+00
Eutrophication aquatic marine	kg N eq.	5.48E-01	3.46E-02	9.94E-02	1.98E-03	2.91E-02	0.00E+00	3.78E-02	0.00E+00
Eutrophication terrestrial	mol N eq.	5.92E+00	3.83E-01	1.08E+00	2.19E-02	3.22E-01	0.00E+00	4.16E-01	0.00E+00
Photochemical ozone formation	kg NMVOC eq.	1.91E+00	6.70E-02	2.85E-01	5.54E-03	5.63E-02	0.00E+00	1.15E-01	0.00E+00
Depletion of abiotic resources - minerals and metals	kg Sb eq.	5.33E-04	9.99E-07	-2.10E-04	6.76E-08	8.47E-07	0.00E+00	1.85E-06	0.00E+00
Depletion of abiotic resources - fossil fuels	MJ, net calorific value	9.50E+03	1.65E+02	6.07E+02	1.12E+01	1.40E+02	0.00E+00	2.69E+02	0.00E+00
Water use	m ³ world eq. deprived	4.04E+03	1.21E-01	4.13E+00	8.15E-03	1.02E-01	0.00E+00	2.14E+00	0.00E+00
Particulate matter emissions	Disease incidence	3.82E-05	2.64E-07	1.72E-06	4.81E-08	2.28E-07	0.00E+00	1.82E-06	0.00E+00
Ionizing radiation, human health	kBq U235 eq.	6.11E+01	4.50E-02	1.15E+00	3.05E-03	3.81E-02	0.00E+00	3.03E-01	0.00E+00
Ecotoxicity (freshwater)	CTUe	1.80E+04	1.23E+02	2.57E+02	8.35E+00	1.05E+02	0.00E+00	1.53E+02	0.00E+00
Human toxicity, cancer effects	CTUh	5.51E-07	2.55E-09	2.34E-06	1.73E-10	2.16E-09	0.00E+00	2.27E-08	0.00E+00
Human toxicity, noncancer effects	CTUh	2.06E-05	1.38E-07	2.76E-04	1.02E-08	1.17E-07	0.00E+00	2.51E-06	0.00E+00
Land use related impacts / soil quality	Pt	5.34E+04	5.79E+01	5.60E+01	3.92E+00	4.90E+01	0.00E+00	5.85E+01	0.00E+00

Table 22 Cetris boards painted with other services: Parameters describing resource use, waste and outputs flows

Parameter	Unit	A1	A2	A3	C1	C2	C3	C4	D
PERE	MJ	1.23E+04	9.54E+00	5.76E+01	6.45E-01	8.08E+00	0.00E+00	3.53E+01	0.00E+00
PERM	MJ	0.00E+00							
PERT	MJ	1.23E+04	9.54E+00	5.76E+01	6.45E-01	8.08E+00	0.00E+00	3.53E+01	0.00E+00
PENRE	MJ	9.50E+03	1.66E+02	6.08E+02	1.12E+01	1.40E+02	0.00E+00	2.69E+02	0.00E+00
PENRM	MJ	3.66E+00	0.00E+00						
PENRT	MJ	9.50E+03	1.66E+02	6.08E+02	1.12E+01	1.40E+02	0.00E+00	2.69E+02	0.00E+00
Use of secondary material	kg	0.00E+00							
Use of renewable secondary fuels	MJ	0.00E+00							
Use of non-renewable secondary fuels	MJ	0.00E+00							
Water	m ³	9.61E+01	1.11E-02	1.28E-01	7.52E-04	9.41E-03	0.00E+00	6.76E-02	0.00E+00
Hazardous waste disposed	kg	1.70E-01	7.66E-06	6.22E-05	5.18E-07	6.49E-06	0.00E+00	4.10E-06	0.00E+00
Non hazardous waste disposed	kg	1.40E+01	2.62E-02	2.34E+02	1.78E-03	2.22E-02	0.00E+00	1.35E+03	0.00E+00
Radioactive waste disposed	kg	7.44E-01	3.05E-04	1.34E-02	2.06E-05	2.59E-04	0.00E+00	3.01E-03	0.00E+00
Components for reuse	kg	0.00E+00							
Material for recycling	kg	0.00E+00							
Materilas for energy recovery	kg	0.00E+00							
Exported energy electrical	MJ	0.00E+00							
Exported energy thermal	MJ	0.00E+00							

14.3 SELECTION OF CHARACTERISATION FACTORS

The characterization of CML-IA version 4.8, dated as of August 2016 was used based on EN 15804+A2.

14.4 JUSTIFICATION OF CHARACTERISATION FACTORS

Not to be applied. All input/output flows are on the list of characterization factors of the EN15804+A2.

14.5 INFORMATION ON THE ENVIRONMENTAL IMPACTS IN THE PROJECT REPORT

14.5.1 REFERENCE TO CHARACTERISATION MODELS AND FACTORS

GWP 100 - IPCC 2013

IPCC 2013 is the successor of the IPCC 2007 method, which was developed by the Intergovernmental Panel on Climate Change. It contains the climate change factors of IPCC with a timeframe of 100 years. IPCC characterization factors for the direct (except CH₄) global warming potential of air emissions. They do not include the indirect formation of dinitrogen monoxide from nitrogen emissions; not accounting for radiative forcing due to emissions of NO_x, water, sulfate, etc. in the lower stratosphere + upper troposphere; not considering the range of indirect effects given by IPCC; not including indirect effects of CO emissions. Normalization and weighting are not a part of this method.

Cumulative Energy Demand

Method to calculate Cumulative Energy Demand (CED), based on the method published by ecoinvent version 3.2 and expanded by thinkstep for raw materials available in the GaBi databases. Wood is not included in this methodology due to the frequent use of wood as feedstock in GaBi. Normalization: it is not a part of this method. Weighting: Each impact category is given the weighting factor 1.

CML-IA baseline

CML-IA is an LCA methodology developed by the Center of Environmental Science (CML) of Leiden University in The Netherlands. In case several methods are available for obligatory impact categories, a baseline indicator is selected, based on the principle of best available practice. These baseline indicators are category indicators at the "mid-point level" (problem-oriented approach). Baseline indicators are recommended for simplified studies. The guide provides guidelines for the inclusion of other methods and impact category indicators in case of detailed studies and extended studies. Only baseline indicators are available in the CML method in GaBi (based on CML Excel spreadsheet with characterization and normalization factors). In general, these indicators do not deviate from the ones in the spreadsheet. In case the spreadsheet contained synonyms of substance names already available in the substance list of the GaBi database, the existing names are used.

Depletion of abiotic resources

Two impact categories: Abiotic depletion (elements, ultimate reserves) and abiotic depletion (fossil fuels). Abiotic depletion (elements, ultimate reserves) is related to the extraction of minerals due to inputs in the system. The Potential of Abiotic Depletion (ADP) is determined for each extraction of minerals (kg antimony equivalents/kg extraction) based on concentration reserves and rate of deaccumulation. Abiotic depletion of fossil fuels is related to the Lower Heating Value (LHV) expressed in MJ per kg or m³ fossil fuel. The reason for taking the LHV is that fossil fuels are considered to be fully substitutable.

Global warming

The characterization model as developed by the Intergovernmental Panel on Climate Change (IPCC) is selected for the development of characterization factors. Factors are expressed as Global Warming Potential for time horizon 100 years (GWP100), in kg carbon dioxide equivalent/kg emission.

Ozone layer depletion (steady-state)

The characterization model is developed by the World Meteorological Organisation (WMO) and defines the ozone depletion potential of different gases (kg CFC-11 equivalent/ kg emission).

Photochemical oxidation (high NOx)

The model is developed by Jenkin & Hayman and Derwent and defines photochemical oxidation expressed in kg ethylene equivalents per kg emission.

Acidification

Acidification potential expressed in kg SO₂ equivalents per kg emission. The model is developed by Huijbregts.

Eutrophication

Eutrophication potential was developed by Heijungs et al and expressed in kg PO₄³⁻ equivalents per kg emission.

14.5.2 STATEMENT THAT THE ESTIMATED IMPACT RESULTS ARE ONLY RELATIVE STATEMENTS WHICH DO NOT INDICATE THE ENDPOINTS OF THE IMPACT CATEGORIES, EXCEEDING THRESHOLD VALUES, SAFETY MARGINS, OR RISKS

Estimated results of impact category indicators are relative, indicating no endpoints of impact categories.

15 INTERPRETATION

15.1 INTERPRETATION OF THE RESULTS BASED ON A DOMINANCE/CONTRIBUTION ANALYSIS OF SELECTED INDICATORS

The results of each modules were related to sum of impacts for each indicators. Relative impacts are shown in following tables.



Figure 14 Relative impacts of LCA stages by each environmental indicator for cement-bonded particleboard CETRIS – basic

For the CETRIS – basic particleboard, the stage of raw material production (A1) is highly dominant across the considered system. Nevertheless, the disposal stage (C4) affects significantly the impact on Climate change – total indicator. Equally, the production stage (A3) causes a beneficial impact on the indicator of depletion abiotic resources – minerals and metals due to processes of recycling waste from manufacturing.



Figure 15 Relative impacts of LCA stages by each environmental indicator for cement-bonded particleboard CETRIS – custom-made

Similarly, for the CETRIS – custom-made particleboard, the stage of raw material production (A1) is highly dominant across the considered system.



Figure 16 Relative impacts of LCA stages by each environmental indicator for cement-bonded particleboard CETRIS – painted (without other services)

Likewise, for the CETRIS – basic particleboard, the stage of raw material production (A1) is highly dominant across the considered system. However, the production stage (A3) affects the impacts on the indicators of Human toxicity (cancer effects) and Human toxicity (noncancer effects). On the other hand, this stage causes a beneficial impact on the indicator of depletion abiotic resources – minerals and metals due to processes of recycling waste from manufacturing.



Figure 17 Relative impacts of LCA stages by each environmental indicator for cement-bonded particleboard CETRIS – painted, with additional services

Also, for CETRIS – painted particleboard with additional services, the stage of raw material production (A1) is highly dominant across the considered system. In the comparison with CETRIS painted particleboard (without other services), the manufacturing stage has a similar influence on indicators of Human toxicity (cancer effects) and Human toxicity (noncancer effects).

15.2 RELATIONSHIP BETWEEN THE RESULTS OF THE LIFE CYCLE INVENTORY ASSESSMENT AND THE RESULTS OF THE LIFE CYCLE IMPACT ASSESSMENT (LCIA)

The results of the life cycle impact assessment were calculated using the characterization methods according to EN 15 804 + A2. Regarding the characterization methods, the calculation is based on multiplying the life cycle inventory results by characterization factors.

15.3 ASSUMPTIONS AND RESTRICTIONS

No specific assumptions and restrictions are applied.

15.4 VARIANCE FROM THE MEANS OF LCIA RESULTS

No variance from the means.

15.5 DATA QUALITY ASSESSMENT

Data quality is assessed by independent verification.

15.6 COMPREHENSIVE TRANSPARENCY AS REGARDS VALUE DECISIONS, JUSTIFICATIONS, AND EXPERT OPINIONS

No specific value decision, justification, and/or expert opinions are applied.

16 DOCUMENTATION OF ADDITIONAL INFORMATION

No additional information.

17 DOCUMENTATION FOR CALCULATING THE REFERENCE SERVICE LIFE (RSL)

Not relevant.

18 REFERENCES

EN 15804: EN 15804:2012+A2:2019, Sustainability of construction works - Environmental Product Declarations — Core rules for the product category of construction products

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

ISO 14040: EN ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework

ISO 14044: EN ISO 14044:2006 Environmental management — Life cycle assessment — Requirements and guidelines

Ecoinvent: Ecoinvent Centre, www.Eco-invent.org

Thinkstep: GaBi software version 9.5, 2020, Sphera solutions.