



Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

IRIS CHAR 21 from **IRIS COATING**



Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Type of EPD:	EPD of a single product from a manufacturer/service provider
EPD registration number:	EPD-IES-0028745:001
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An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com



GENERAL INFORMATION

Programme Information	
Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	support@environdec.com

Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): Construction products, 2019:14, version 2.0.1. UN CPC code: 35110 – paints and varnishes and related products
PCR review was conducted by: The Technical Committee of the International EPD System.

Third-party Verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:
<input checked="" type="checkbox"/> Individual EPD verification without a pre-verified LCA/EPD tool Third-party verifier: <i>Michela Gallo, University of Genova</i> Approved by: International EPD System
Procedure for follow-up of data during EPD validity involves third party verifier:
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

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

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

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

INFORMATION ABOUT EPD OWNER

Owner of the EPD: Iris Coating

Address: Via Novi 42, 15050 Basaluzzo (AL), Italy

Contact: Claudio Pagella (claudio.pagella@iriscoatings.it)

Address and contact information of the LCA practitioner commissioned by the EPD owner, if applicable:
Chiara Cappelletti, INNOVHUB-SSI srl, Via Galileo Galilei 1, 20097 San Donato Mil.se (MI)

Description of the organisation: Iris Coating is a company specializing in functional and reactive coatings, operating for over 50 years in the construction, railway, and shipbuilding sectors. It manufactures intumescent coatings, fireproof sealants and passive fire protection products, which expand in the event of a fire to form a thermal insulating barrier, protecting steel, reinforced concrete, wood, and combustible structures. It was among the first companies in Europe to obtain certification for intumescent coatings according to EN standards.

Product-related or management system-related certifications: Test and classification reports of performance according to EN 13381-3, EN 13501-1, EN 13501-2, system certificates according to ISO 9001 and ISO 14001.

PRODUCT INFORMATION

Product name: IRIS CHAR 21

Product identification: Intumescent (reactive) coating for fire protection of steel, reinforced concrete, partitioning walls, wood.

UN CPC code: 35110 - paints and varnishes and related products

Product description: CHAR 21 is an intumescent coating (also named reactive coatings) supplied in liquid form and applied by airless spray, brush, roller to build up a protective layer of 200-2000 µm dry film thickness over different surfaces. It is used for increasing the resistance-to-fire of steel or concrete structures and the reaction-to-fire characteristics of wood and flammable substrates.

The process begins with the procurement of raw materials, which are weighed or volumetrically dosed; the pre-dispersions are then prepared and the raw materials are loaded into the disperser manually (additives), with a hopper (fillers), and with pumping (binders and pre-dispersions). Finally, the dispersion is packaged by filtration.

Name and location of production site(s): IRIS Coatings, via Novi 42, 15060 Basaluzzo (AL), Italy

CONTENT DECLARATION

Product content	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/product or declared unit
Additive	0.047	0	0	0
Pigment	0.100	0	0	0
Polymer	0.237	0	0	0
Intumescent agents	0.468	0	0	0
Biocide	0.001	0	0	0
Water	0.148	0	0	0
TOTAL	1	0	0	0

Packaging materials	Mass, kg	Mass-% (versus the product)	Biogenic material, kg C/product or declared unit
Plastic	0.036	3.6	0
Wood	0.038	3.8	1,69E-01
TOTAL	0.074	7.4	1,69E-01

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

Hazardous substances from the candidate list of SVHC	EC No.	CAS No.	Mass-% per product or declared unit
Melamine	203-615-4	108-78-1	10.4

LCA INFORMATION

Declared unit: 1 kg of finished product plus the weight of the packaging

Reference service life: N.A.

Time representativeness: 2024

Geographical scope: Europe

Database(s) and LCA software used: Ecoinvent version 3.11 and CEPE 2.0. SimaPro version 10.1.0.1 EF3.1 (the EN 15804 reference package)

Description of system boundaries:

System boundaries are defined in accordance with EN 15804 section 5.2, the EPD is of the "Cradle to gate" type with additional modules C1-C4 and D modules and A4-A5 modules.

The system boundaries range from the raw materials supplying to the packaging of paint products. The end-of-life and disposal scenarios for the products were also outlined.

The main stages of the life cycle include:

A. Production phase

A1: Raw materials supplying (additives, polymers, pigments etc.) and extraction

A2 Incoming transport of raw materials

A3 Production: production of products in the production site;

A4: Transport of the product to customer sites. It was defined a scenario considering the different areas of delivery.

A5: The environmental impacts about the installation procedure of this kind of product can be considered irrelevant, the impact relating to this module is therefore considering only the waste management of product packaging.

C. End of life

C1: Demolition process (note: the paint product, after its application, is physically integrated with other materials and cannot be physically separated from them at the end of its life. The impact relating to this module is therefore considered null)

C2: Transport of waste to treatment/disposal points. A distance of 130 km using "Transport, freight, lorry 16-32 metric ton, EURO5" dataset as indicated in table 4 of PCR for "Transport of products/materials to be incinerated" was considered.

C3: Waste treatment processes for preparation for recovery-recycling (100% disposal)

C4: Final waste disposal (end of product life): was assumed that all product was disposed and incinerated

D. Resource recovery

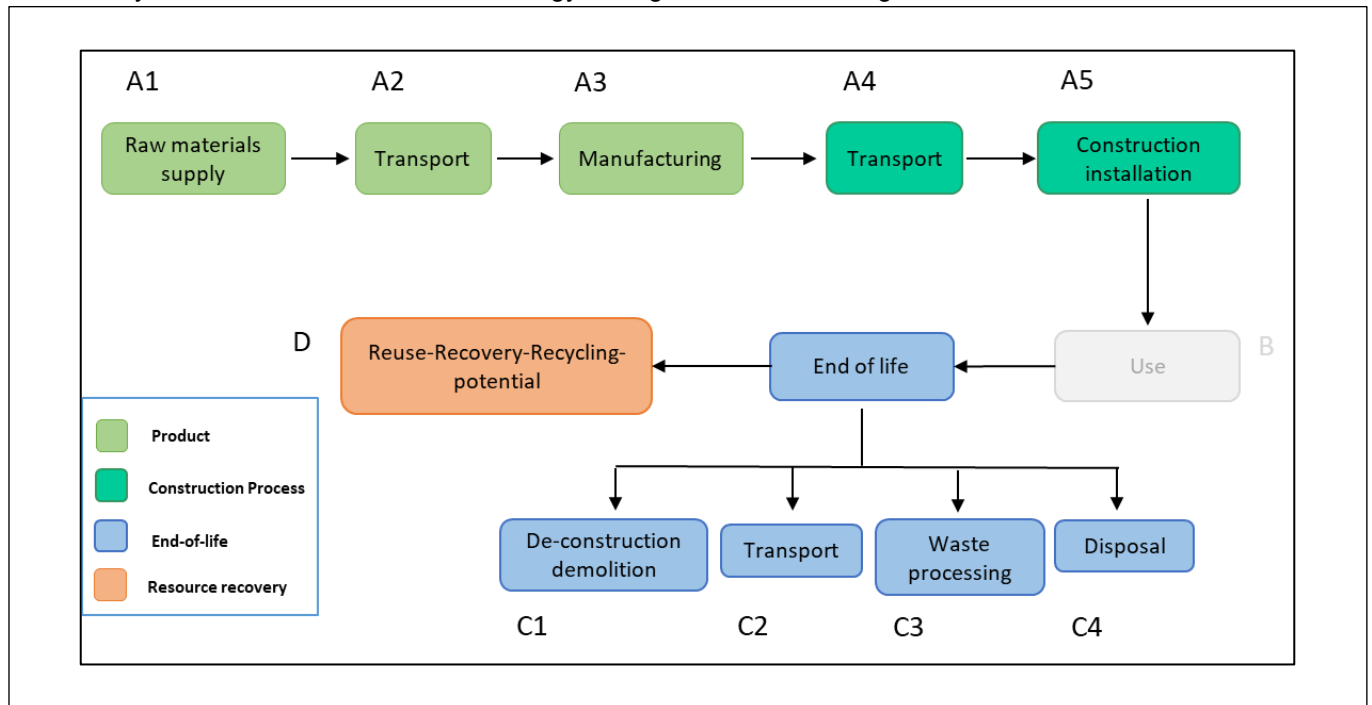
Potential benefits and impacts related to recovery-reuse-recycling of materials and energy related to packaging: the reuse, recycling, and disposal data for plastic and wood obtained from the national recycling consortia reports (Corepla and Rilegno) were utilized.

Cut-off rules

Natural gas consumption was excluded as it was less than 1% by mass per unit process. Gas is used only for building heating.

Process flow diagram:

Process flow diagram of the product system, divided into the life-cycle stages and modules (or other division of the product life cycle, if defined in the PCR), showing the main processes included and the system boundary of the LCA. The diagram shall make it clear when the end-of-waste state is reached for main input flows of reused/recycled materials and recovered energy, and for output flows of reused/recycled materials and recovered energy exiting the end-of-life stage.



More information:

Data Quality

The inventory data collected are partly primary data and secondary data.

The primary, product-specific data were collected directly at the plant (Module A3) and concern the quantity of raw materials used in the formulation, including mains water consumption, energy consumption data, waste generation and emissions, and packaging data. Data relating to the assessment of transportation for raw material procurement (Module A2) and transportation to the suppliers (Module A4) are also considered primary data. The secondary data concern the definition of the raw materials used in the formulation of the products under study (Module A1), the data related to the End-of-life (Module C2-C4) and the data relating to Resource recovery (Module D).

For secondary data, datasets from the Ecoinvent 3.11 database were used, with a time reference updated to March 2025 and datasets from the CEPE 2.0 database with a time reference 2013-2016. According to what is specified in Annex E.2 of EN 15804+A2, the level of data quality relating to the

datasets used in the EPD can be considered "very good" or "good". Only with reference to temporal representativeness, it can be considered "poor" for data taken from the CEPE 2.0 dataset.

Process name	Source Type	Source	Reference year	Data category	Share of primary data, of GWP GHG results for A1 A3
(A1) Raw materials	Database	Ecoinvent 3.11 CEPE 2.0	2025 2013-2016	Secondary data	0%
(A2) Transport of raw materials to manufacturing site	Database	EPD owner	2025	Primary data	6%
(A3) Manufactory of product	Collected data	EPD owner	2024	Primary data	5%
Total share of primary data, of GWP GHG results for A1-A3					

Allocation Rules

All data refers to 1 kg of product. The production process for the products in this study does not generate co-products.

Electricity consumption is allocated by extrapolating the total energy consumption values of the line, re-proportioning them based on the duration of the specific production process, including any preparatory and/or ancillary processes (e.g., mixer washing, packaging).

All data relating to the product and not attributable to the specific production process, where significant, have been re-proportioned per kg of product, considering the percentage weight of the specific production compared to the total weight produced at the production site.

Effluents and wastes are allocated per 1 kg of packaged product, with appropriate extrapolations from the overall plant data and *waste scenario* follow the allocation specified in the Ecoinvent database.

The yield of process is 99%.

Electricity used in the manufacturing process in A3

Type of energy mix	
Residual mix (IT)	79%
Green electricity from photovoltaic panels (IT)	21%
Climate Impact	5,58E-01 kg CO2 eq/kWh

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	RoW, EU, IT	RoW, EU, IT	EU, IT	EU, IT	EU, IT	ND	ND	ND	ND	ND	ND	ND	EU, IT	EU, IT	EU, IT	EU, IT	EU, IT
Specific data used*	11%			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Variation – products	ND			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Variation – sites	ND			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

* Based on the total share of primary data, of GWP-GHG results

ENVIRONMENTAL PERFORMANCE

LCA results of the product(s) - main environmental performance results

Mandatory impact category indicators according to EN 15804

Results per declared unit										
Indicator	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
GWP-fossil	kg CO2 eq.	3,05E+00	2,34E-01	9,24E-02	ND	0,00E+00	2,47E-02	0,00E+00	5,14E-03	-3,25E-04
GWP-biogenic	kg CO2 eq.	-3,45E-03	1,08E-04	4,81E-02	ND	0,00E+00	1,70E-05	0,00E+00	1,09E-01	-1,81E-01
GWP-luluc	kg CO2 eq.	3,26E-03	8,32E-05	2,35E-05	ND	0,00E+00	8,19E-06	0,00E+00	9,57E-07	-1,44E-07
GWP-total	kg CO2 eq.	3,05E+00	2,34E-01	1,40E-01	ND	0,00E+00	2,48E-02	0,00E+00	1,14E-01	-1,81E-01
ODP	kg CFC 11 eq.	4,73E-08	5,09E-09	1,45E-09	ND	0,00E+00	5,40E-10	0,00E+00	1,83E-10	-1,05E-11
AP	mol H+ eq.	2,60E-02	7,09E-04	1,17E-04	ND	0,00E+00	7,94E-05	0,00E+00	3,43E-05	-8,00E-07
EP-freshwater	kg P eq.	8,55E-04	1,82E-05	2,55E-05	ND	0,00E+00	1,69E-06	0,00E+00	2,67E-07	-5,15E-08
EP-marine	kg N eq.	3,43E-03	2,27E-04	2,73E-05	ND	0,00E+00	2,67E-05	0,00E+00	1,46E-05	-1,82E-07
EP-terrestrial	mol N eq.	4,08E-02	2,47E-03	2,66E-04	ND	0,00E+00	2,91E-04	0,00E+00	1,60E-04	-1,90E-06
POCP	kg NMVOC eq.	1,32E-02	1,05E-03	1,03E-04	ND	0,00E+00	1,20E-04	0,00E+00	6,00E-05	-7,97E-07
ADP-minerals&metals*	kg Sb eq.	5,01E-05	1,00E-06	1,26E-07	ND	0,00E+00	8,34E-08	0,00E+00	6,39E-09	-2,75E-10
ADP-fossil*	MJ	4,31E+01	3,29E+00	4,02E-01	ND	0,00E+00	3,51E-01	0,00E+00	1,35E-01	-5,45E-03
WDP*	m3	4,31E+00	1,27E-02	-3,38E-01	ND	0,00E+00	1,36E-03	0,00E+00	4,67E-04	-9,91E-05
Acronymus	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption									
*Disclaimer	The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.									

Additional mandatory and voluntary impact category indicators

Indicator	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
GWP-fossil ¹	kg CO2 eq.	3,05E+00	2,34E-01	9,24E-02	ND	0,00E+00	2,47E-02	0,00E+00	5,14E-03	-3,25E-04

¹ This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO2 is set to zero.

Resource use indicators

Results per declared unit										
Indicator	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
PERE	MJ	1,32E+00	5,58E-02	1,42E-02	ND	0,00E+00	4,49E-03	0,00E+00	1,68E-03	-1,04E-03
PERM	MJ	8,96E-02	0,00E+00	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,41E+00	5,58E-02	1,42E-02	ND	0,00E+00	4,49E-03	0,00E+00	1,68E-03	-1,04E-03
PENRE	MJ	3,93E+01	3,30E+00	2,44E-01	ND	0,00E+00	3,52E-01	0,00E+00	1,36E-01	-6,11E-03
PENRM	MJ	5,45E+00	0,00E+00	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	4,47E+01	3,30E+00	2,44E-01	ND	0,00E+00	3,52E-01	0,00E+00	1,36E-01	-6,11E-03
SM	kg	0,00E+00	0,00E+00	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	1,00E-04	0,00E+00	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Acronymus	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water									

Waste indicators

Results per declared unit										
Indicator	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2,02E-02	0,00E+00	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste disposed	kg	1,90E-01	0,00E+00	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Radioactive waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Output flow indicators

Results per declared unit										
Indicator	Unit	A1-A3	A4	A5	B1 – B7	C1	C2	C3	C4	D
Components for re-use	kg	4,30E-02	0,00E+00	0,00E+00	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	3,63E-02	0,00E+00	0,00E+00	ND	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	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	ND	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	ND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ABBREVIATIONS

Abbreviation	Definition
General Abbreviations	
EN	European Norm (Standard)
EPD	Environmental Product Declaration
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
PCR	Product Category Rules
c-PCR	Complementary Product Category Rules
CEN	European Committee for Standardization
CLC	Co-location centre
CPC	Central product classification
GHS	Globally harmonized system of classification and labelling of chemicals
GRI	Global Reporting Initiative
Environmental Impact Indicators (EN 15804)	
GHG	Greenhouse gas
GWP	Global Warming Potential (kg CO ₂ eq.)
GWP-fossil	Global Warming Potential from fossil sources (kg CO ₂ eq.)
GWP-biogenic	Global Warming Potential from biogenic sources (kg CO ₂ eq.)
GWP-luluc	Global Warming Potential from land use and land use change (kg CO ₂ eq.)
GWP-total	Total Global Warming Potential (kg CO ₂ eq.)
GWP-GHG	Global Warming Potential for greenhouse gases (kg CO ₂ eq.)
ODP	Ozone Depletion Potential (kg CFC-11 eq.)
AP	Acidification Potential (mol H ⁺ eq.)
EP	Eutrophication Potential
EP-freshwater	Freshwater eutrophication potential (kg P eq.)
EP-marine	Marine eutrophication potential (kg N eq.)
EP-terrestrial	Terrestrial eutrophication potential (mol N eq.)
POCP	Photochemical Ozone Creation Potential (kg NMVOC eq.)
ADP	Abiotic Depletion Potential
ADP-minerals&metals	Abiotic depletion potential for non-fossil resources (kg Sb eq.)
ADP-fossil	Abiotic depletion potential for fossil resources (MJ)
WDP	Water Deprivation Potential (m ³)
Resource Use Indicators	
PERE	Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ)
PERM	Use of renewable primary energy resources used as raw materials (MJ)
PERT	Total use of renewable primary energy resources (MJ)
PENRE	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (MJ)
PENRM	Use of non-renewable primary energy resources used as raw materials (MJ)
PENRT	Total use of non-renewable primary energy resources (MJ)
SM	Use of secondary material (kg)
RSF	Use of renewable secondary fuels (MJ)
NRSF	Use of non-renewable secondary fuels (MJ)
FW	Use of net fresh water (m ³)
Waste Indicators	
HW	Hazardous Waste (disposed) (kg)
NHW	Non-Hazardous Waste (disposed) (kg)
RW	Radioactive Waste (disposed) (kg)
Output Flow Indicators	
CFR	Components for Reuse (kg)

MR	Material for Recycling (kg)
MER	Materials for Energy Recovery (kg)
EEE	Exported Energy, Electricity (MJ)
EET	Exported Energy, Thermal (MJ)
Lifecycle Stages / Modules	
A1	Raw material supply
A2	Transport
A3	Manufacturing
A4	Transport to site
A5	Construction/Installation
B1	Use
B2	Maintenance
B3	Repair
B4	Replacement
B5	Refurbishment
B6	Operational energy use
B7	Operational water use
C1	Deconstruction/Demolition
C2	Transport to waste processing
C3	Waste processing
C4	Disposal
D	Reuse-Recovery-Recycling potential
Other Relevant Terms	
SVHC	Substances of Very High Concern
EC No.	European Community Number
CAS No.	Chemical Abstracts Service Number
MJ	Megajoule
kg	Kilogram
m ³	Cubic Meter
NMVOG	Non-Methane Volatile Organic Compounds
Sb eq.	Antimony Equivalents
P eq.	Phosphorus Equivalents
N eq.	Nitrogen Equivalents
CFC-11 eq.	Chlorofluorocarbon-11 Equivalents
CO ₂ eq.	Carbon Dioxide Equivalents
kg C	Kilograms of Carbon
kg CO ₂ eq.	Kilograms of Carbon Dioxide Equivalent
ND	Not Declared

REFERENCES

- General Program Instructions of the International EPD System. Version 4.0.
- EN 15804 sustainability of construction works environmental product declarations core rules for the product category of construction products
- General program instructions of the international EPD system. Version 5.1
- PCR 2019:14 Construction products. Version 2.1
- ISO 14040:2006 Environmental management — Life cycle assessment — Principles and framework
- ISO 14044:2006 Environmental management — Life cycle assessment — Requirements and guidelines
- LCA made by Innovhub-SSI (RPT-ISSI-260073)
- DataBase: Ecoinvent version 3.11 and CEPE 2.0

VERSION HISTORY

Original Version of the EPD, 2026-02-26

