

ENVIRONMENTAL PRODUCT DECLARATION

POLYGOOD®

PLASTIC PANELS MADE FROM 100% RECYCLED POLYSTYRENE
BY THE GOOD PLASTIC COMPANY

BASED ON:
ISO 14025:2006 PCR 2018:10 -
Boards, blocks, panels, sheets of
plastics, or in composite system,
for structural application (non-
construction) (1.0.2)

UN CPC CODE:
36390 - Other plates, sheets, film,
foil and strip, of plastics

**THE INTERNATIONAL
EPD® SYSTEM:**
www.environdec.com

PROGRAMME OPERATOR:
EPD International AB

EPD REGISTRATION NUMBER:
S-P-09636

PUBLICATION DATE:
2023-06-29

VALID UNTIL:
2028-06-28

PROGRAMME INFORMATION



Programme:

The International EPD® System

EPD International AB
Box 210 60
SE-100 31 Stockholm
Sweden

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info@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification

Product Category Rules (PCR)

PCR 2018:10 (being updated) - Boards, blocks, panels, sheets of plastics, or in composite system, for structural application (non-construction) (1.0.2)

UN CPC code 36390 - Other plates, sheets, film, foil and strip, of plastics

PCR review conducted by IVL Swedish Environmental Research Institute Secretariat of the International EPD® System

Life Cycle Assessment (LCA)

LCA accountability: Dr. Ing. Kaspars Zudrags, SIA BM Certification

Third-party verification

Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:

EPD verification by individual verifier

Third-party verifier: Prof. V. Koči

Approved by: The International EPD® System

Procedure for follow-up of data during EPD validity involves third-party verifier:

Yes No

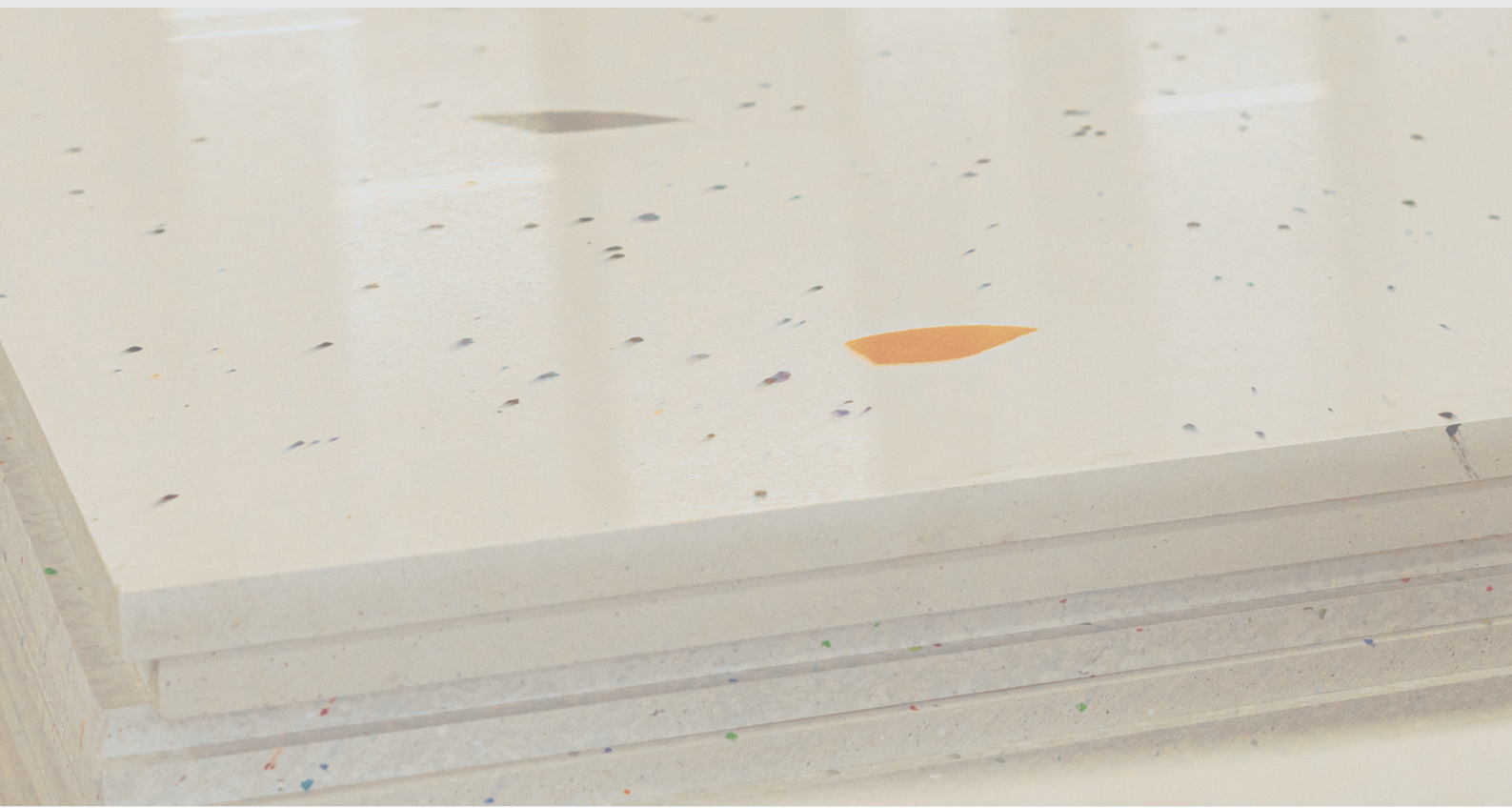


THE COMPANY



The story of The Good Plastic Company began in the Netherlands in 2018. The company's mission is to offer a sustainable solution to plastic waste by remanufacturing it into new products, thus preserving valuable materials. Since then, The Good Plastic Company has expanded its operations to an international level, collaborating with renowned global brands, designers, and architects worldwide. Through its work, the company has successfully demonstrated the versatility of recycled plastic and its viability for large-scale commercial utilisation.

Today, our Polygood® surface material is offered in a diverse selection of colours and patterns. With patent applications lodged for several of our innovative technologies, we are actively advancing our capacity to effectively harness polystyrene, and other plastic types, from diverse waste sources. Additionally, by leveraging data analysis, we have gained valuable insights into temperature control, pressure regulation, specific melting points, melt flow indexes, machining techniques, and time management. This wealth of knowledge and combination of cutting-edge techniques allows us to deliver distinctive as well as entirely recycled and recyclable products to our clients according to circular economy principles.



PRODUCTION FACILITIES



The Good Plastic Company B.V.
Keersluisweg 7, Hal 1,
1332 EE Almere
Netherlands



The Good Plastic Company Ukraine
246 Holovna St,
Chernivtsi, Chernivets'ka oblast, 58032
Ukraine

ISO CERTIFICATIONS



The Good Plastic Company has been awarded a raft of three key ISO certifications ISO 14001, ISO 9001, and ISO 45001. These certifications signify our commitment to upholding the highest standards of environmental responsibility, quality management, and occupational health and safety in our manufacturing processes. They are evidence of our ability to consistently provide products that meet the exacting standards of large brands, while minimising our environmental impact and ensuring the safety and well-being of our employees. We are proud to be recognised for our commitment to excellence, and we look forward to continuing to provide our customers with the highest quality recycled plastic surface materials on the market.



Certificate Number 230064 - ISO 9001
Certificate Number 230870 - ISO 14001
Certificate Number 230871 - ISO 45001



Polygood® is designed, developed and manufactured under a management system certified by Bureau Veritas against ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018.

ISO 14001:2015 Environmental management systems

ISO 14001:2015 is a standard for environmental management systems (EMS) that helps organisations improve their environmental performance. It is applicable to all types of organisations and focuses on outcomes like enhanced environmental performance and compliance fulfillment.

ISO 9001:2015 Quality management systems

ISO 9001:2015 is a standard for quality management systems (QMS) that helps organisations consistently to provide products and services meeting customer and regulatory requirements. It aims to enhance customer satisfaction and can be applied by any organisations, regardless of size or industry.

ISO 45001:2018 Occupational health and safety management systems

ISO 45001:2018 is a standard for occupational health and safety management systems (OH&S). It helps organisations establish systems to prevent work-related injuries and improve OH&S performance. The standard is applicable to all organisations, regardless of size or industry.

THE PRODUCT



The purpose of this EPD is to evaluate Polygood® panels, which are made entirely from recycled polystyrene. Polygood® surface materials are specifically designed to be a versatile solution for both exterior and interior designers, architects, furniture manufacturers, and global brands who prioritise responsible resource usage.

Polygood® offers several notable features. Firstly, it is lightweight and hygienic. Additionally, this material is resistant to moulding and rotting, and it can be easily shaped and manipulated using a wide range of forming and cutting techniques.

UN CPC code: 36390 – Other plates, sheets, film, foil and strip, of plastics.

Polygood®

Properties common to all Polygood® materials:

Specific weight of Polygood® panel	1.0-1.1kg/dm
Mass of 1m ² of Polygood® panel with thickness of 12mm	12-13kg/m ²
Mass of 1m ² of Polygood® panel with thickness of 19mm	19-21kg/m ²
Flexural strength, ISO 178:2010 Method B	49-56N/mm ²
Tensile strength, ISO 527 2:2012 Method A	22-26MPa
Heat deflection temperature, ISO 75 2:2013 Method A	72-76°C
Vicat softening temperature, ISO 306:2013	95-98°C
Coefficient of Linear Thermal Expansion (CLTE) of Polystyrene (for comparison: wood 5, brick 5.5, glass 9, iron 12, concrete 15, aluminum 22, cast acrylic 81, polyethylene 200)	70 x 10 ⁻⁶ /°C
Cutting on sliding table saws	Use plastic-cutting circular saw blades; fix panel on sliding table
Cutting and milling on CNC	Milling cutters for plastic
Thermoforming	Press with contact heating, contact us for advice

CONTENT DECLARATION



The Good Plastic Company has chosen recycled plastic as its primary material due to the company's commitment to reducing waste and contributing to the circular economy. This recycled plastic is sourced from EuCertPlast certified suppliers specialising in recycling polystyrene derived from electronic and electrical waste (WEEE), as well as post-industrial tubes and spools. Recycled polystyrene (rPS), which forms the entire composition of Polygood® panels, was selected due to its lower energy demand compared to other polymers during the production process, thereby reducing environmental impact. Additionally, the use of polystyrene in Polygood® allows for its application as a structural material, effectively reducing the need for additional support materials. Furthermore, the recyclability of polystyrene enables it to be easily reintroduced into the recycling process at the end of its current useful economic life, maintaining its beneficial qualities of durability and strength without significant losses or quality degradation. This comprehensive approach showcases our commitment to sustainable practices throughout the entire lifecycle of our products.

During our Cradle to Cradle Version 4.0 certification process, we successfully underwent a Materials Health Assessment in collaboration with the Cradle to Cradle Products Innovation Institute. This accomplishment serves as tangible evidence of our adherence to the most ambitious and actionable global standard for developing products that are not only safe, but also embrace circularity and responsible manufacturing practices.

Ensuring safety and well-being at all stages of our product's life is of utmost importance to us. That's why we have subjected Polygood® panels to rigorous testing to meet the highest standards of non-toxicity. Our compliance with ISO 16000-9/EN 16516 (BREEAM) ensures a healthy indoor environment, while comprehensive assessments following EN 14582 standards confirm the absence of hazardous metals and halogens. With our commitment to safety and non-toxicity, customers can trust in the quality provided by Polygood® panels.

Product components	[kg]	%	Environmental/hazardous properties
Recycled polystyrene	1000	100	Recycled

The product does not contain any REACH SVHC substances in amounts greater than 0.1% (1000 ppm).

PACKAGING



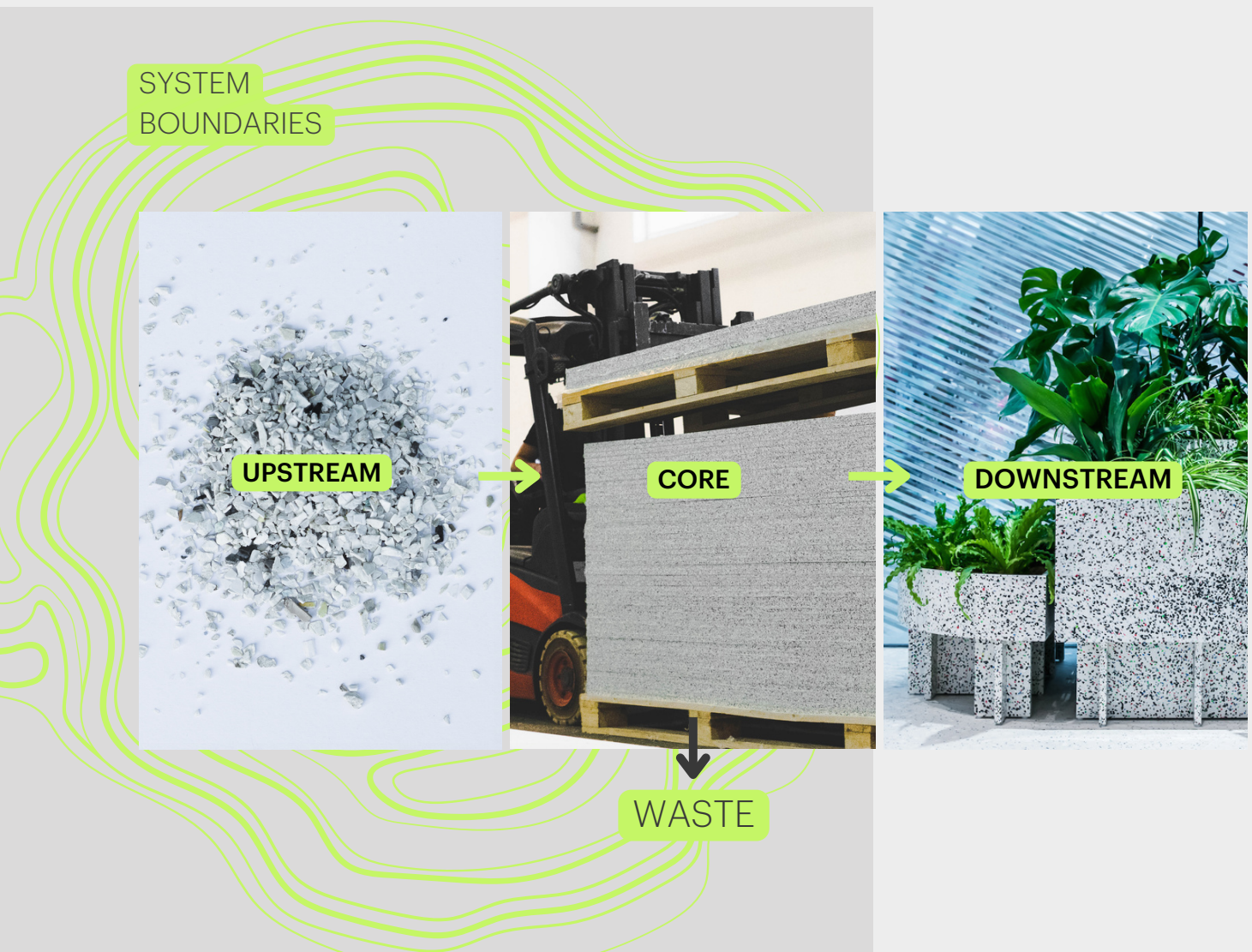
We follow a careful process to guarantee the safe transportation of our panels. First, we apply a protective PP packaging film to shield the panels from scratches during handling and transportation. Next, we carefully place recycled PE stretch wrap on top, securely wrapping panels together. We also utilise strapping coil, which helps to hold everything in place and prevent any shifting. Additionally, we add recycled cardboard protectors to safeguard the corners of the packed panels, as these areas are particularly susceptible to damage. Finally, we place the packaged panels onto sturdy wooden pallets, providing a stable and secure base for transportation. These measures ensure that our panels arrive at their destination in optimal condition.



PRODUCTION PROCESSES



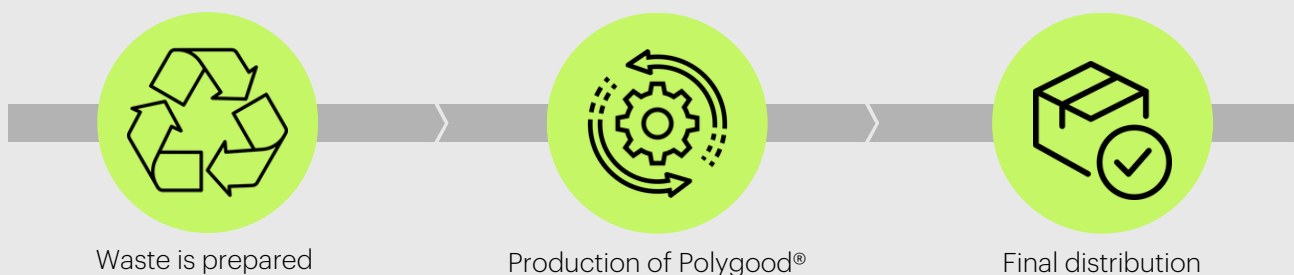
After receiving the recycled polystyrene from suppliers, our production team thoroughly inspects everything. Once the materials have successfully passed the quality control stage, they proceed to the thermal pressing and finishing phases, which play a vital role in the creation of high-quality and durable Polygood® materials. The packaged panels are then dispatched to distributors and directly to our customers at their designated destinations.



SCOPE AND TYPE OF EPD



Geographic scope:	Europe	System boundaries:	Cradle-to-gate
Functional unit/declared unit:	1m ³ of Polygood® recycled board	Excluded lifecycle stages:	B1-B7, C1-C4, D
Database(s) and LCA software:	One Click LCA, Ecoinvent 3.6.	Service life:	10 years



Time representativeness: Data for calculation were collected by The Good Plastic Company and cover 12 months of the year 2022

LCA METHODOLOGY

The LCA study includes all the processes according to PCR 2018:10.

The environmental footprint of the product has been examined in accordance with the EPD general instructions issued by the International EPD® System and PCR 2018:10, “Boards, blocks, panels, sheets of plastics, or in composite system, for structural application (non-construction)”.

This declaration is a cradle to gate with options EPD type, based on the application of Life Cycle Assessment (LCA) methodology.


Polygood® processes at the factory level were described by using specific data from The Good Plastic Company’s manufacturing facility (Chernivtsi, Ukraine) for the year 202. Customised LCA surveys were used to acquire detailed information about every facet of the production process, aiming to present a comprehensive overview of the environmental impact of the system, starting from waste supply (Upstream) to the manufacturing of Polygood® panels (Core).


All known inputs and outputs are included in the study. Ancillary materials have been excluded due to insufficient and minor influence of data. No less than 95% of all inflows (mass and energy) to the upstream and core modules are included.




UPSTREAM




 Collection and Sorting

Mechanical treatment: shredding, crushing 



 Regranulation

Recovering plastics and converting them into secondary raw materials 



CORE





Retail



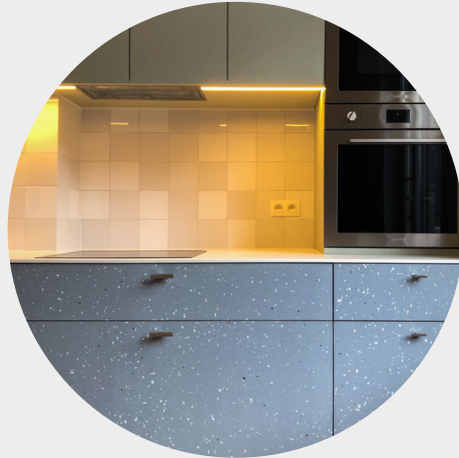
Hospitality



Offices and spaces



Wet zones



Kitchens



Outdoor



Flooring



Furniture



Installations

ENVIRONMENTAL PERFORMANCE



IMPACT CATEGORY INDICATORS

CATEGORY	UNIT	UPSTREAM	CORE	TOTAL
GWP,f	kg CO ₂ eq.	2.23E+02	2.56E+02	4.79E+02
GWP,b	kg CO ₂ eq.	3.61E+00	-7.70E-02	3.53E+00
GWP,luluc	kg CO ₂ eq.	2.44E+00	2.10E-01	2.65E+00
GWP	kg CO ₂ eq.	2.29E+02	2.58E+02	4.87E+02
ODP	kg CFC 11 eq.	4.30E-06	4.11E-05	2.91E-05
AP	mol H ⁺ eq.	2.40E+00	1.43E+00	1.14E+00
EP Aquatic freshwater	kg P eq.	4.09E-03	7.55E-03	1.16E-02
EP Aquatic marine	kg N eq.	6.85E-01	3.26E-01	1.01E+00
EP Aquatic terrestrial	mol N eq.	7.41E+00	3.45E+00	1.09E+01
POCP	kg NMVOC eq.	1.82E+00	1.13E+00	1.04E+00
ADP Metals and minerals	kg Sb eq.	8.17E-04	3.11E-03	3.92E-03
ADP Fossil resources	MJ, net calorific value	2.30E+03	4.57E+03	6.87E+03
WDP	m ³ world eq. deprived	2.70E+01	4.76E+01	7.85E+01

GWP,f Global warming potential, fossil

GWP,b Global warming potential, biogenesis

GWP,luluc Global warming potential, land use & land use change

GWP Global warming potential, total

ODP Ozone layer depletion

AP Acidification Potential

EP Eutrophication Potential

POCP Photochemical ozone creation potential

ADP Abiotic depletion potential

WDP Water use deprivation potential



RESOURCE USE INDICATORS

	UNIT	UPSTREAM	CORE	TOTAL
PERE	MJ, net calorific value	7.53E+03	4.92E+02	8.02E+03
PERM	MJ, net calorific value	0.00E+00	1.42E+03	1.42E+03
PERT	MJ, net calorific value	7.53E+03	1.92E+03	9.44E+03
PENRE	MJ, net calorific value	2.30E+03	4.27E+03	6.57E+03
PENRM	MJ, net calorific value	2.12E+04	3.01E+02	2.15E+04
PENRT	MJ, net calorific value	2.35E+04	4.57E+03	2.80E+04
SM	kg	1.01E+03	1.01E-01	1.01E+03
RSF	MJ, net calorific value	0.00E+00	4.30E-04	4.30E-04
NRSF	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00
FW	m ³	3.40E+00	1.05E+00	4.45E+00

PERE Renewable energy (carrier)

PERM Renewable energy (feedstock)

PERT Renewable energy (total)

PENRE Non-renewable energy (carrier)

PENRM Non-renewable energy (feedstock)

PENRT Non-renewable energy (total)

SM Use of secondary materials

RSF Use of renewable secondary fuels

NRSF Use of non-renewable secondary fuels

FW Use of Net Fresh Water

ENVIRONMENTAL PERFORMANCE



WASTE INDICATORS

	UNIT	UPSTREAM	CORE	TOTAL
HWD	kg	1.17E+00	1.65E+01	1.76E+01
NHWD	kg	4.91E+01	4.87E+02	5.36E+02
RWD	kg	1.01E-01	2.58E-02	1.26E-01

HWD Hazardous waste disposed

NHWD Non-hazardous waste disposed

RWD Radioactive waste disposed

OUTPUT FLOW INDICATORS

	UNIT	UPSTREAM	CORE	TOTAL
CRU	kg	0.00E+00	0.00E+00	0.00E+00
MFR	kg	1.00E+03	0.00E+00	1.00E+03
MER	kg	0.00E+00	0.00E+00	0.00E+00
EE	MJ per energy carrier	0.00E+00	0.00E+00	0.00E+00
EE,t	MJ per energy carrier	0.00E+00	0.00E+00	0.00E+00

CRU Components for re-use

MFR Material for recycling

MER Materials for energy recovery

EE Exported energy

EE,t Exported energy thermal

REFERENCES



- General Programme Instructions of the International EPD® System. Version 3.0.
- PCR 2018:10 (being updated) - Boards, blocks, panels, sheets of plastics, or in composite system, for structural application (non-construction) (1.0.2)
- ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations. Principles and procedures.
- ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.
- ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.
- Ecoinvent database v3.6 (2019) and One Click LCA database.
- Polygood® LCA background report 31.03.2023.

