SMILE PLASTICS

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

Smile Plastics decorative panels made from recycled HIPS

Re-worked Ltd, TA Smile Plastics

EPD HUB, EPD HUB-0907
Publishing 04.12.2023, last updated 19.12.2023, valid until 04.12.2028

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Re-worked Ltd, TA Smile Plastics
Address	Re-worked Ltd TA Smile Plastics, RMG, Kingsway, Swansea West Industrial Park, Swansea, SA5 4DL
Contact details	info@smile-plastics.com
Website	https://smile-plastics.com/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.0, 1 Feb 2022
Sector	Manufactured product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-B7, and modules C1-C4, D
EPD author	Sam McGarrick (Blue Marble Environmental Partnerships Ltd.)
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	Smile Plastics decorative panels from recycled HIPS
Additional labels	Alba, Heron
Product reference	-
Place of production	Swansea, South Wales
Period for data	01 January 2022 - 01 January 2023
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	-%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 unit of recycled plastic panel measuring 3000 x 1200 mm with a thickness of 12mm
Declared unit mass	49.7 kg
GWP-fossil, A1-A3 (kgCO2e)	1.64E+01
GWP-total, A1-A3 (kgCO2e)	-9.51E+00
Secondary material, inputs (%)	100.0
Secondary material, outputs (%)	81.8
Total energy use, A1-A3 (kWh)	168.0
Total water use, A1-A3 (m3e)	1.64E-01

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Spearheading the movement to transform waste into high-quality materials, Smile Plastics was first established in the 1990s and has led the way in recycled plastics ever since. Servicing a global community of brands, architects and designers we continue to advance our patent pending technology to leverage an ever increasing array of highest quality sustainable products for the circular economy.

From over 30 years of data driven advanced engineering innovation and development, now directed from our micro-factory in Swansea, UK, we supply fully circular plastic panels at commercial scale. Our mission of integrity in product and operations has awarded us two ISO accreditations, ISO 14001 and ISO 9001. Demonstrating our continued commitment to improving our environmental responsibilities, quality management and operational processes as a safety-first company promoting wellbeing for all.

As a trusted supplier, together with our growing client base; through our materials we minimise our impact on the planet while maximising joy and well-being in our built environment. We believe that if you want to create genuine change, it takes a village. As designers and makers, it is our shared responsibility to act with integrity and take concrete steps towards a more circular world.

In that spirit, we are proud to share our environmental data with you today.

SMILE PLASTICS

PRODUCT DESCRIPTION

From the demure and elegant to the playful and energetic, Smile Plastics products are full of personality. Thanks to our spectrum of raw materials, innovative production technology and hand-guided approach, our panels are versatile, individual and brimming with character.

This EPD evaluates our decorative plastic panels made from 100% recycled, 100% recyclable high impact polystyrene (rHIPS) from single-use waste sources that would typically be sent to landfill (ranging from white goods to yoghurt pots).

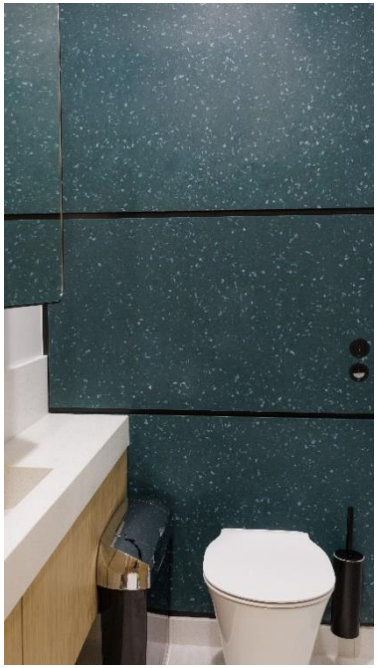
Hard, dense and rigid Smile Plastic rHIPS recycled plastic panels offer many key features for interior applications at all scales. Whether requiring waterproof and mould resistant solutions to cut profiles, edge detailing and heat-forming into a variety of seamless shapes. Versatility doesn't end here; our materials are tested for food contact approval and for fungal resistance to EN1186 and ASTM G21-15 standards.

We also do not add any toxic additives to the raw materials which are tested for likely persistent organic pollutants (POP's). This helps ensure a REACH compliant product.

	Unit	
Physical		
Density	g/cm^3	1.06
Mechanical		
Izod Impact Strength (notched)	kJ/m^2	6.8
Modulus of Elasticity (Chord 0.05%-0.25%)	MPa	2240
Tensile Maximum Load	N	1366
Tensile Strength (yield)	MPa	21.3
Tensile Strength (break)	MPa	17
Elongation at Break	%	5
Shore D Hardness	D	73.9
Thermal		
Heat Deflection Temperature (1.8 Mpa)	°C	86.2
Coefficient of Thermal Expansion	µm/m°C	97.6
Flammability Rating **		UL94HB
Bacterial		
Fungi Resistance	Fungal Growth %	0
Food Contact	Pass/Fail	Pass

Not recommended for outdoor applications as the material may yellow / destabilise with exposure to UV.
**Flammability Rating: where better ratings are required we can make up Custom materials from waste streams that have a higher rating.

APPLICATIONS



→ Bathrooms and washrooms

↑ Events and exhibitions

→ Hospitality

↑ Residential

→ Office and workspace

↑ Retail

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	0	
Minerals	0	
Fossil materials	100	UK
Bio-based materials	0	

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	6.266

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 unit of recycled plastic panel measuring 3000 x 1200 mm with a thickness of 12mm
Mass per declared unit	49.7 kg
Functional unit	1 unit of recycled plastic panel measuring 3000 x 1200 mm with a thickness of 12mm for 5 years
Reference service life	5 years

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

The product comprises >99% pre and post-consumer recycled High Impact Polystyrene (HIPS) plus a pigment which is suspended in oil to the granulate mix (this has been excluded from this EPD study as it represents <0.78% of the total mass of the product).

As the rHIPS is a recovered material, the life cycle of the product starts after the material has passed the end-of-waste state. This occurs after the plastics have been collected, sorted, decontaminated, shredded and are available to Smile Plastics for onward processing.

Recycled HIPS is sourced from various suppliers and an average transportation distance to Smile Plastics manufacturing facility of 161km has been calculated. The Heron product is 100% comprised of rHIPS reclaimed from white goods, the Alba product uses pre and post-consumer recycled HIPS.

100% of the recycled HIPS from white goods is pre-shredded (Heron) with 78% of the recycled HIPS from pre and post consumer waste (Alba) shredded by Smile Plastics on-site. The manufacturing process uses medium voltage electricity which is drawn from the UK grid. Panels are produced using a hot press process and vacuum lift that produces no manufacturing waste. However, the system produces excess material (production losses) that is recycled internally, either by re-processing for use in a subsequent run, or by using as a raw material in a separate project.

The product is packaged for onward distribution to customers and is transported on a specially designed pallet produced by a local manufacturer of timber transit packaging which is delivered to Smile Plastics manufacturing facility in Swansea via lorry (EURO 6, >32tonne) with vehicle capacity utilisation volume factor 1 (full load). The pallets are IPSM15 compliant and are made from UK FSC/ PEFC pine with a total mass 80kg.

Additionally, cardboard is used to protect the product in transit and a plastic shrink-wrap is applied to the entire pallet once fully loaded with product.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

Average distance of transportation from Smile Plastic's production facilities to customer sites during the data period was calculated to be 275.73km and the transportation method is via lorry (EURO 6, >32tonne). Vehicle capacity utilisation volume factor is assumed to be 1 which means full load. In reality, utilisation may vary but as the role of transportation emissions in terms of total results is small, the variety in load is assumed to be negligible. Empty returns are not taken into account as it is assumed that return trip is used by the transportation company to

serve the needs of other clients. Transportation does not cause losses as the product is packaged properly.

Installation typically involves use of hand-held power tools to drill pilot holes in the base and adding to pre-made legs on-site. Therefore, low-voltage electricity used in the operation of power tools has been included.

Packaging waste is assumed to leave the system at the point of installation. Cardboard packaging is assumed to be 100% recycled and the pallet is assumed to be incinerated with energy recovery. Plastic wrap is conservatively assumed to be sent to landfill with no benefits.

PRODUCT USE AND MAINTENANCE (B1-B7)

The product has a reference service life of five (5) years. The reference service life is based on currently available warranty information for standard products, however, in reality the majority of product applications are custom designed, and the actual service life may exceed five years. No repair or replacement is anticipated during the reference service life. Therefore, only maintenance in the form of cleaning using detergent and water (including treatment of waste water) over a period of five years is included.

PRODUCT END OF LIFE (C1-c4, D)

The product is typically mechanically fixed in place, so does not require any energy consumption for removal at end-of-life.

It is assumed that the product (as waste) is collected and transported to a local waste treatment centre. Transportation distance to waste treatment is assumed as 50 km and the transportation method is assumed to be lorry (EURO 6, >32tonnes).

The product is 100% recyclable. However, in this EPD, a more conservative scenario has been modelled in order to reflect recycling rates currently achieved in the United Kingdom (see PlasticsEurope, 2022 The Circular Economy for Plastics - A European overview).

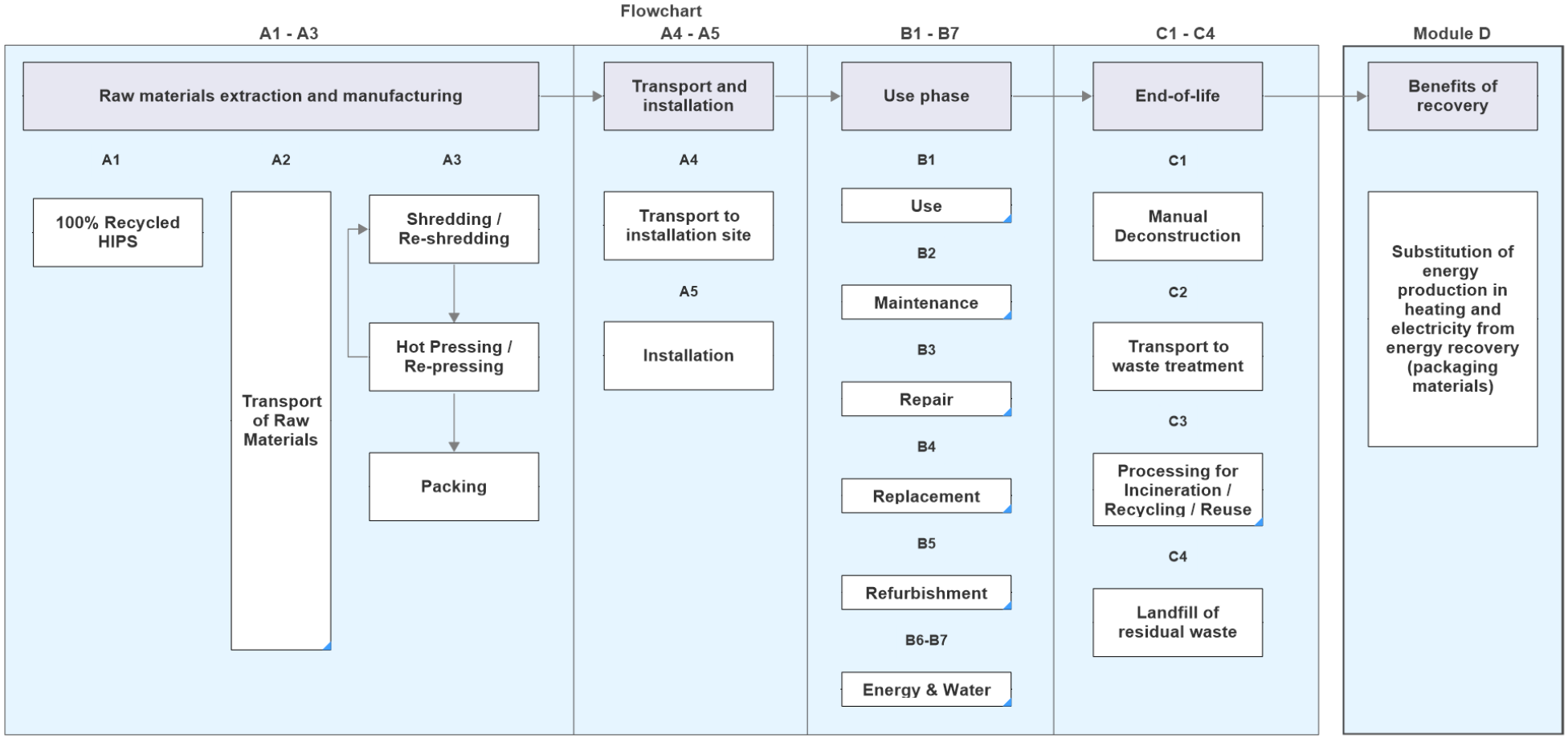
Smile plastics reports a return rate of 4.8% of total production output, which is re-shred and incorporated back into the system (for inclusion into new products).

Once the material for reuse has been accounted for, the remaining material is split amongst recycling (37%), incineration with energy recovery (44%) and sanitary landfill (19%).

Module C3 accounts for energy and resource inputs for sorting and treating these waste streams for recycling and incineration with energy recovery with efficiency greater than 60%. Additionally, waste that is incinerated without energy recovery or sent to landfill is included in Module C4.

Due to the 100% recycled content of the product, to avoid double counting no benefits are claimed in Module D for avoided virgin material production or energy recovery from incineration which displaces electricity and heat production. However, Module D benefits are claimed for energy recovery from incineration and recycling of packaging materials (pallet and cardboard liner respectively).

MANUFACTURING PROCESS – SIMPLIFIED FLOWCHART



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging materials	No allocation
Ancillary materials	No allocation
Manufacturing energy and waste	No allocation

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	-%

This EPD is product and factory specific and does not contain average calculations.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. Ecoinvent v3.8 and One Click LCA databases were used as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP – total[1)]	kg CO_2e	0.00E+00	7.44E-01	-1.03E+01	-9.51E+00	1.63E+00	2.63E+01	0.00E+00	4.16E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.72E-01	6.75E+01	1.40E+00	-6.01E+00
GWP – fossil	kg CO_2e	0.00E+00	7.43E-01	1.57E+01	1.64E+01	1.63E+00	2.69E-01	0.00E+00	4.16E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.72E-01	6.75E+01	1.40E+00	-6.01E+00
GWP – biogenic	kg CO_2e	0.00E+00	0.00E+00	-2.60E+01	-2.60E+01	6.58E-04	2.60E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GWP – LULUC	kg CO_2e	0.00E+00	2.89E-04	5.74E-02	5.77E-02	6.33E-04	3.65E-04	0.00E+00	3.51E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.06E-04	2.59E-03	1.02E-04	1.78E-04
Ozone depletion pot.	kg CFC_{-11}e	0.00E+00	1.75E-07	1.43E-06	1.61E-06	3.83E-07	2.64E-08	0.00E+00	4.30E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.40E-08	1.19E-07	2.89E-08	-8.22E-07
Acidification potential	mol H^+e	0.00E+00	2.42E-03	6.87E-02	7.11E-02	5.31E-03	1.13E-03	0.00E+00	3.02E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.86E-04	1.38E-02	8.29E-04	-9.50E-03
EP-freshwater[2)]	kg Pe	0.00E+00	6.30E-06	7.33E-04	7.40E-04	1.38E-05	1.46E-05	0.00E+00	1.28E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.31E-06	5.73E-05	1.61E-06	-6.29E-05
EP-marine	kg Ne	0.00E+00	5.32E-04	1.88E-02	1.93E-02	1.17E-03	2.08E-04	0.00E+00	4.67E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.95E-04	6.76E-03	6.22E-04	-1.95E-03
EP-terrestrial	mol Ne	0.00E+00	5.91E-03	1.92E-01	1.98E-01	1.29E-02	2.21E-03	0.00E+00	4.84E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.16E-03	5.73E-02	3.05E-03	-2.34E-02
POCP ("smog")[3)]	kg NMVOCe	0.00E+00	2.29E-03	5.72E-02	5.94E-02	5.02E-03	6.79E-04	0.00E+00	1.80E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.37E-04	1.52E-02	1.18E-03	-6.89E-03
ADP-minerals & metals[4)]	kg Sbe	0.00E+00	1.81E-06	7.39E-05	7.57E-05	3.97E-06	1.49E-06	0.00E+00	6.74E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.62E-07	2.11E-05	3.30E-07	-8.39E-06
ADP-fossil resources	MJ	0.00E+00	1.16E+01	3.62E+02	3.73E+02	2.55E+01	4.69E+00	0.00E+00	1.30E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.26E+00	1.59E+01	2.22E+00	-1.15E+02
Water use[5)]	m^3e depr.	0.00E+00	5.20E-02	6.94E+00	7.00E+00	1.14E-01	8.72E-02	0.00E+00	2.23E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.90E-02	1.83E+00	1.35E-02	2.22E-01

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	0.00E+00	8.45E-08	1.12E-06	1.20E-06	1.85E-07	1.34E-08	0.00E+00	3.33E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.09E-08	1.32E-07	1.64E-08	-9.06E-08
Ionizing radiation[6)]	kBq U235e	0.00E+00	5.58E-02	1.02E+01	1.02E+01	1.22E-01	1.03E-01	0.00E+00	1.44E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.04E-02	7.03E-02	1.08E-02	-1.37E+00
Ecotoxicity (freshwater)	CTUe	0.00E+00	1.04E+01	2.58E+02	2.69E+02	2.27E+01	4.57E+00	0.00E+00	9.80E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.79E+00	1.10E+02	3.04E+00	-2.67E+01
Human toxicity, cancer	CTUh	0.00E+00	2.53E-10	2.88E-08	2.90E-08	5.55E-10	2.03E-10	0.00E+00	8.30E-10	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.27E-11	7.77E-09	7.71E-11	-3.75E-10
Human tox. non-cancer	CTUh	0.00E+00	9.97E-09	2.06E-07	2.16E-07	2.19E-08	3.83E-09	0.00E+00	1.65E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.65E-09	1.79E-07	1.64E-09	6.78E-09
SQP[7)]	-	0.00E+00	1.34E+01	2.36E+03	2.37E+03	2.94E+01	2.26E+00	0.00E+00	1.50E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.90E+00	2.07E+01	5.34E+00	-7.97E+01

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy[8)]	MJ	0.00E+00	1.31E-01	2.39E+02	2.40E+02	2.87E-01	6.51E-01	0.00E+00	2.83E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.80E-02	1.16E+00	4.22E-02	-1.95E+01
Renew. PER as material	MJ	0.00E+00	0.00E+00	2.26E+02	2.26E+02	0.00E+00	-2.26E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.60E+00
Total use of renew. PER	MJ	0.00E+00	1.31E-01	4.65E+02	4.65E+02	2.87E-01	-2.25E+02	0.00E+00	2.83E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.80E-02	1.16E+00	4.22E-02	-1.39E+01
Non-re. PER as energy	MJ	0.00E+00	1.16E+01	3.49E+02	3.60E+02	2.55E+01	4.69E+00	0.00E+00	5.83E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.26E+00	1.59E+01	2.22E+00	-1.15E+02
Non-re. PER as material	MJ	1.92E+03	0.00E+00	1.27E+01	1.94E+03	0.00E+00	-1.27E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.58E+03	-3.46E+02	-1.83E-01
Total use of non-re. PER	MJ	1.92E+03	1.16E+01	3.61E+02	2.30E+03	2.55E+01	-8.04E+00	0.00E+00	5.83E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.26E+00	-1.56E+03	-3.44E+02	-1.15E+02
Secondary materials	kg	0.00E+00	3.23E-03	3.08E+00	3.09E+00	7.08E-03	2.24E-03	0.00E+00	1.70E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.18E-03	7.31E-02	7.91E-04	1.96E-01
Renew. secondary fuels	MJ	0.00E+00	3.26E-05	6.05E+00	6.05E+00	7.14E-05	9.30E-06	0.00E+00	5.52E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.19E-05	5.60E-04	3.04E-05	3.07E-02
Non-ren. 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	0.00E+00	0.00E+00	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 net fresh water	m^3	0.00E+00	1.50E-03	1.62E-01	1.64E-01	3.30E-03	2.62E-03	0.00E+00	5.14E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.50E-04	1.26E-02	2.37E-03	-2.03E-02

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	0.00E+00	1.53E-02	9.98E-01	1.01E+00	3.36E-02	1.78E-02	0.00E+00	2.78E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.61E-03	1.90E-01	0.00E+00	-1.18E-01
Non-hazardous waste	kg	0.00E+00	2.52E-01	1.85E+01	1.88E+01	5.52E-01	7.13E-01	0.00E+00	4.88E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.21E-02	2.33E+01	8.99E+00	1.22E+01
Radioactive waste	kg	0.00E+00	7.85E-05	2.72E-03	2.80E-03	1.72E-04	3.38E-05	0.00E+00	7.87E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.87E-05	3.48E-05	0.00E+00	-3.93E-04

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.39E+00	0.00E+00	0.00E+00
Materials for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.77E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.75E+01	0.00E+00	0.00E+00
Materials for energy rec	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	0.00E+00	0.00E+00	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	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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO_2e	0.00E+00	7.36E-01	1.55E+01	1.63E+01	1.61E+00	2.80E-01	0.00E+00	4.01E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.69E-01	6.84E+01	1.14E+00	-5.90E+00
Ozone depletion Pot.	kg CFC_{-11}e	0.00E+00	1.39E-07	1.23E-06	1.37E-06	3.04E-07	2.16E-08	0.00E+00	4.12E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.07E-08	1.03E-07	2.29E-08	-7.19E-07
Acidification	kg SO_2e	0.00E+00	1.96E-03	5.17E-02	5.36E-02	4.31E-03	9.34E-04	0.00E+00	2.56E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.19E-04	1.02E-02	6.30E-04	-7.26E-03
Eutrophication	kg PO_4^3e	0.00E+00	4.30E-04	2.90E-02	2.94E-02	9.41E-04	8.26E-04	0.00E+00	5.24E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.57E-04	1.25E-02	5.52E-02	-1.13E-03
POCP (“smog”)	kg C_2H_4e	0.00E+00	9.05E-05	4.48E-03	4.57E-03	1.98E-04	5.31E-05	0.00E+00	1.28E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.31E-05	5.81E-04	2.06E-04	-5.43E-04
ADP-elements	kg Sbe	0.00E+00	1.76E-06	7.28E-05	7.46E-05	3.86E-06	1.47E-06	0.00E+00	6.31E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.44E-07	2.07E-05	3.19E-07	-6.73E-06
ADP-fossil	MJ	0.00E+00	1.16E+01	3.61E+02	3.73E+02	2.55E+01	4.69E+00	0.00E+00	1.30E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.26E+00	1.59E+01	2.22E+00	-1.15E+02

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? Read more online

This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

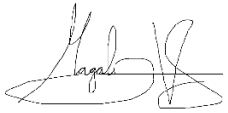
I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited

04.12.2023



VERIFIED ISO 14025