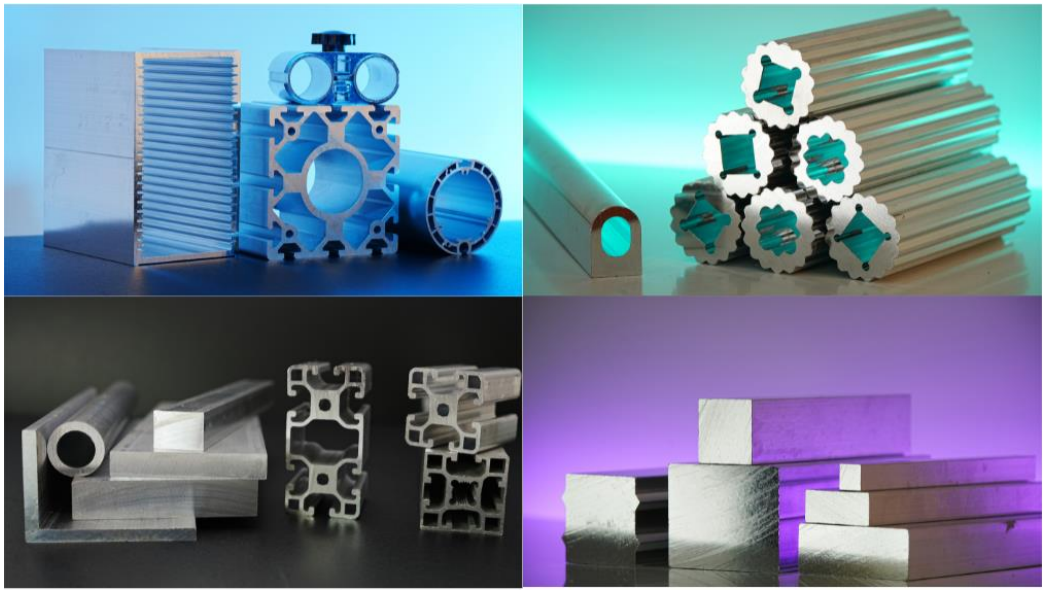
ENVIRONMENTAL PRODUCT DECLARATION

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

Mill Finished Aluminium Profile
New Age Aluminium Industries Sdn. Bhd.



EPD HUB, HUB- 3789
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Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.1 (5 Dec 2023) and JRC characterization factors EF 3.1.

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	New Age Aluminium Industries Sdn. Bhd.
Address	Lot 1, No. 160-B Subang New Village, Jalan TUDM, 40150 Shah Alam, Selangor Malaysia
Contact details	sales@newagealuminium.com
Website	https://newagealuminium.com/AboutUs

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804:2012+A2:2019/AC:2021 and ISO 14025
PCR	EPD Hub Core PCR Version 1.1, 5 Dec 2023
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	-
Scope of the EPD	Cradle to gate with modules C1-C4, D
EPD author	Nora Tan, Sustinere Pte Ltd
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☑ External verification
EPD verifier	Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited

This EPD is intended for business-to-business and/or business-to-consumer communication. 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	Mill Finished Aluminium Profile
Additional labels	-
Product reference	-
Place(s) of raw material origin	UAE (Dubai, Abu Dhabi) and Malaysia
Place of production	Subang, Malaysia
Place(s) of installation and use	Global
Period for data	1 March 2024 - 28 February 2025
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3 (%)	-
GTIN (Global Trade Item Number)	UN CPC 41532
NOBB (Norwegian Building Product Database)	-
A1-A3 Specific data (%)	13,4

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg
Declared unit mass	1 kg
GWP-fossil, A1-A3 ($kgCO_2e$)	5,58E+00
GWP-total, A1-A3 ($kgCO_2e$)	5,59E+00
Secondary material, inputs (%)	11
Secondary material, outputs (%)	25,6
Total energy use, A1-A3 (kWh)	20
Net freshwater use, A1-A3 (m^3)	0,02

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Established in 2008, New Age Aluminium Industries Sdn. Bhd. operates under the strategy “All-in-One: Design, Extrude, and Deliver,” providing aluminium extrusion solutions tailored to meet the needs of customers worldwide.

New Age Aluminium Industries Sdn. Bhd. is committed to developing a highly skilled workforce and continually invests in both hardware and software technologies. Its comprehensive in-house capabilities in tool and die making, fabrication, and extrusion enables the company to offer customised solutions and efficient, end-to-end service support. Driven by its motto “We Shape Your Ideas”, New Age Aluminium Industries Sdn. Bhd. designs, tests and manufactures to transform customer ideas into tangible product solutions.

New Age Aluminium Industries Sdn. Bhd. serves both local and international markets with a wide range of aluminium extrusion products, including standard and customised profiles, fabricated components, and engineered parts. Demonstrating its commitment to quality, the company is certified to the ISO 9001:2015 standard in quality management.

Industries and markets served include:

- **Infrastructure:** Engineering, construction, architecture, marine, oil and gas, solar and electrical systems, thermal break extrusions, and profile fabrication
- **Automotive:** Transportation and recreational vehicles, conveyor systems, and linear motion components
- **Consumer Goods:** Air conditioners, office partitions, furniture and equipment, kitchen cabinets, household products, ladders, and consumer-durable extrusion profiles
- **Other Sectors:** Medical instruments, semiconductors, electronics, cosmetic components, and automation line applications

PRODUCT DESCRIPTION

Aluminium extrusion is a manufacturing process in which aluminium alloy material is forced through a die to produce profiles with a specific cross-sectional shape. This process allows for the creation of aluminium profiles in a wide range of shapes and sizes. Common examples include flat bars, equal angles, hexagons, rounds, squares, U-channels, open-backs, and custom designs tailored to meet specific client requirements across industries such as construction, automotive, and aerospace.

The 6000 series aluminium extrusion alloys, such as 6060, 6063, 6061, 6082, 6005, 6005A, 6101, 6106, 6261, 6066 and 6463 are medium-strength, heat-treatable alloys containing magnesium and silicon as their principal alloying elements, often with small additions of manganese or copper. They offer a balanced combination of tensile strength, corrosion resistance, and good extrudability, making them widely used in architectural, structural, transportation, and solar applications.

In contrast, the 1000 series alloys, with at least 99% aluminium content and minimal alloying elements, are non-heat-treatable, highly ductile, and provide excellent corrosion resistance and superior electrical and thermal conductivity, though with low mechanical strength, making them suitable for electrical, chemical, and non-structural applications.

Technical properties of mill-finished extruded aluminium profiles relevant to this EPD are detailed in the tables that follow:

(1) 6000 series aluminium extrusion alloys	
Examples	6060, 6063, 6061, 6082, 6005, 6005A, 6101, 6106, 6261, 6066, 6463
Composition and metallurgy	~ 96 – 98% aluminium
Main alloying elements	• Silicon (Si): Improves fluidity during extrusion and enhances strength when combined with magnesium. • Magnesium (Mg): Provides the ability to heat-treat (age hardening) and improves strength. • Manganese (Mn): Enhances corrosion resistance and contributes to strength. • Copper (Cu): Slight addition can increase strength but may reduce corrosion resistance.
Key characteristics	• Heat-Treatable Alloys • 6000 series can be strengthened through solution heat treatment (T4) and artificial aging (T5/T6). • Provides a good balance of medium-to-high strength and good corrosion resistance.
	• Excellent Extrudability. Alloys like 6060/6063 are widely used for complex profiles due to easy flow through dies. • Corrosion Resistance • Naturally forms a thin aluminium oxide film; performs well in most architectural and marine environments.
	• Architectural: Windows, doors, curtain walls, facades. • Structural/Industrial: Machinery frames, transport systems, solar panel structures. • Electrical: 6101 alloy is widely used in busbars and conductors for its conductivity.

(2) 1000 series aluminium extrusion alloys	
Examples	1050, 1060, 1100
Composition and metallurgy	At least 99% aluminium (often 99.0–99.7%) with trace amounts of iron and silicon only
Key characteristics	• Non-heat-treatable, as there are no major alloying elements to facilitate precipitation hardening • Very high workability • Extremely ductile, easy to bend, form and deep-draw • Excellent corrosion resistance • High aluminium purity gives strong resistance to oxidation • High electrical and thermal conductivity and commonly used where conductivity is a priority over strength • Low-strength and mechanical strength is limited typically where load-bearing is not critical
Applications	• Electrical: Cable sheathing, busbars, capacitor casings. • Chemical & Food: Packaging, reflectors, chemical equipment. • Non-structural components: Where lightweight and corrosion resistance are key.

Further information can be found on our website:
https://newagealuminium.com/AboutUs

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
Metals	100	43.69% of billets are secondary raw materials, from Malaysia 34.25% of billets are virgin raw materials, from UAE (Abu Dhabi) 22.04% of billets are virgin raw materials, from Malaysia
Minerals	-	-
Fossil materials	-	-
Bio-based materials	-	-

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	0,0816973106

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg
Mass per declared unit	1 kg
Functional unit	-
Reference service life	-

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	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	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 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.

A market-based approach is used in modelling the electricity mix utilized in the factory.

The following assumptions were also made for modules A1-A3:

(a) Transport assumptions and distances for raw materials: Distances transported for raw material imports via sea-freight were estimated based on the distances between the cities of production using Google Maps. For locally sourced raw materials, the distance transported is assumed to be 50 kilometres via road-based transport, where supplier data is unavailable.

(b) Production losses considered: Production losses refer to the difference between the mass of bill of materials used and mass of production output. This was calculated to be about ~17.54%.

(c) Manufacturing process: Manufacturing process occurs within the factory boundary located in Subang Malaysia, where the following processes took place: pre-heating, extrusion, air-cooling, pulling, sawing, ageing and packing

(d) Energy sources profile: Manufacturing process draws on grid electricity supplied by Tenaga Nasional Berhad, the primary utility company and sole grid operator for Peninsula Malaysia. The facility also generates on-site renewable electricity from solar PV systems for its own consumption, with any excess exported to the grid. Liquefied petroleum gas powers the forklifts in operation as well as the aging ovens used in the heat treatment process to strengthen and harden the extruded profiles.

(e) Packaging and ancillary materials used: Packaging materials comprised 44.54% wood, 34.43% plastics, 17.06% paper and 3.95% steel. Of which, approximately 29.93% of packaging had some level of recycled content.

Ancillary materials comprised extrusion grease and acetylene which are used in manufacturing.

(f) Assumptions for A3 manufacturing waste end-of-life treatment, percentages applied and the references used: Aluminium scrap is widely recycled in industry. Taking reference from global averages reported, we have assumed a recycling rate of 75% for aluminium scrap while 25% is landfilled. Clean packaging waste generated by industry (pre-consumer) is generally recyclable. Due to the lack of primary data from our packaging suppliers, we have based our assumption that 24% plastic packaging is being recycled on a 2021 market study on plastic circularity in Malaysia which was conducted by World Bank Group. Other packaging materials namely wood, paper and steel are assumed to be 35% recycled as this was 2024 national average recycling rate reported by Malaysia's authorities.

g) Transport assumptions and distances for A3 waste. We assumed a road-based distance transported of 50 kilometres as waste is assumed to be processed locally.

TRANSPORT AND INSTALLATION (A4-A5)

This EPD covers the minimum boundary required by the PCR and does not include stages A4 Transport and A5 Installation/Construction.

PRODUCT USE AND MAINTENANCE (B1-B7)

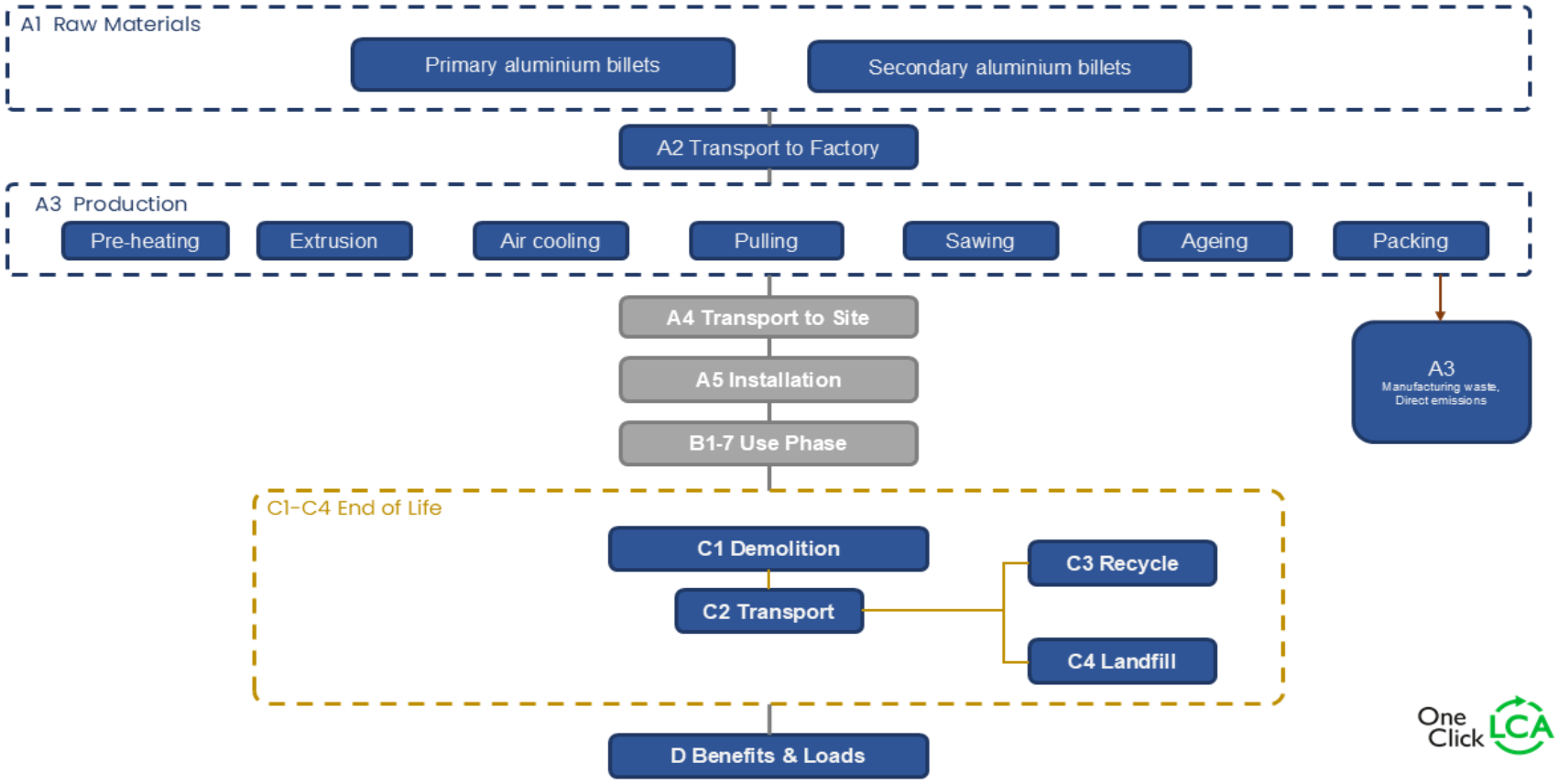
This EPD does not cover the use phase. Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

In C1 Demolition, aluminium extrusions are removed from the building or product system at the end of life. As aluminium components are often mechanically fastened or integrated into assemblies, minimal energy is typically required for their separation, resulting in relatively low environmental impacts. In C2 Transport, the dismantled aluminium profiles are conveyed to a recycling or waste treatment facility is considered in this module. The impacts are calculated based on average transport distances, modes (typically road), and load capacities representative of regional practices. In C3 Waste Processing, sorting and pre-treatment activities such as cutting, shredding, and removal of contaminants to prepare aluminium for remelting. Given aluminium's high recyclability, the majority of post-consumer aluminium extrusion waste is directed toward closed-loop recycling processes, with minimal material loss. A small portion of aluminium that cannot be recovered (e.g., due to contamination or composite materials) is assumed to be landfilled. Since aluminium is rarely disposed of due to its economic recycling value, emissions in this module are generally low. Packaging waste is primarily treated at a sanitary landfill, with a proportion estimated to be collected for recycling. Module D accounts for the net environmental benefits associated with the recycling of aluminium extrusions. Recycled aluminium typically substitutes primary aluminium production, which is significantly more energy-intensive. The environmental benefits of avoided primary aluminium production are reported in this module, following the cut-off system boundary and EN 15804 guidelines. The recycling rate used is based on conservative market averages for post-consumer aluminium in the construction or relevant sector.

MANUFACTURING PROCESS

Life cycle diagram



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

This LCA study includes the provision of all materials, transportation, energy and emission flows, and end of life processing of product. All industrial processes from raw material acquisition and pre-processing, production, product distribution and installation and end-of-life management are included. Due to lack of data, some ancillary materials are excluded but they do not exceed the 1% cut-off criteria. These include materials which are used in the product manufacturing only in very small amounts and have a negligible impact on the emissions of the product. The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded. 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.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

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 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 material	Allocated by mass or volume
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

The Solid Waste and Public Cleansing Management Corporation (SWCorp) operates under the Ministry of Housing and Local Government (Kementerian Perumahan dan Kerajaan Tempatan, KPKT), overseeing Malaysia's solid waste management efforts.

There are currently 21 sanitary landfills in Malaysia. Among these, the Bukit Tagar Sanitary Landfill (BTSL)—located in Bukit Tagar, Hulu Selangor—has been operational since 2005. Classified as a Level IV engineered landfill and designed in accordance with the Ministry's guidelines, BTSL incorporates a comprehensive composite bottom liner system alongside leachate and landfill gas collection and treatment facilities. These features are critical in minimizing risks of groundwater, surface water, and air pollution.

BTSL is also equipped with a 12-megawatt (MW) Waste-to-Energy (WtE) plant that utilizes landfill gas-to-energy technology. Currently receiving 2,500 tons of waste daily from Kuala Lumpur and many local councils, BTSL

is expected to support the Northern Region of Selangor for the next 30 to 40 years as it progressively develops to meet its designed capacity of 120 million tonnes.

To modernize Malaysia's solid waste management system, the Ministry has announced plans to establish 18 new WtE plants by 2040. These plants are projected to reduce solid waste volume by up to 85% compared to traditional landfilling. The national strategy envisions at least one WtE plant in each state by 2035, aligning with Malaysia's broader energy transition roadmap.

Regarding recycling, the 2021 World Bank report titled Market Study for Malaysia: Plastic Circularity Opportunities and Barriers revealed that approximately 24% of plastics—specifically from the four main resins: PET, PP, LDPE/LLDPE, and HDPE—introduced to the market in 2019 were recycled. An additional 13% were either processed for energy recovery or disposed of in sanitary landfills, while the remaining 63% were neither recycled nor properly managed, potentially leading to environmental leakage.

In 2023, Malaysia's national recycling rate increased to 35.38%, up from 15.7% in 2015. Although specific data for Selangor is limited, a 2021 study reported a recycling rate of 47% across Kuala Lumpur, Putrajaya, and Selangor, indicating encouraging regional improvements.

Note: PP (Polypropylene) and LDPE/LLDPE (Low-Density Polyethylene / Linear Low-Density Polyethylene) are common types of plastic resins frequently used in the production of packaging materials.

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	No grouping
Grouping method	Not applicable
Variation in GWP-fossil for A1-A3, %	

This EPD is product and factory specific.

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. The EPD Generator uses Ecoinvent v3.10.1 and One Click LCA databases as sources of environmental data. Allocation used in Ecoinvent 3.10.1 environmental data sources follow the methodology 'allocation, Cut-off, EN 15804+A2'.

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ENVIRONMENTAL IMPACT DATA

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

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	4,51E+00	2,48E-01	8,34E-01	5,59E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,61E-03	1,11E-02	6,61E-03	1,67E-01	-1,08E+01
GWP – fossil	kg CO_2e	4,51E+00	2,48E-01	8,24E-01	5,58E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,60E-03	1,11E-02	6,60E-03	1,66E-01	-1,07E+01
GWP – biogenic	kg CO_2e	1,46E-03	5,62E-05	7,81E-03	9,33E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,56E-03
GWP – LULUC	kg CO_2e	1,08E-03	1,11E-04	2,31E-03	3,49E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,69E-07	4,91E-06	9,44E-06	1,05E-04	-2,21E-02
Ozone depletion pot.	kg CFC_{-11}e	6,62E-08	3,67E-09	1,34E-08	8,33E-08	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,52E-11	1,55E-10	1,19E-10	6,99E-10	-2,93E-08
Acidification potential	mol H^+e	1,85E-02	8,47E-04	3,82E-03	2,32E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,25E-05	3,70E-05	3,81E-05	6,35E-04	-6,97E-02
EP-freshwater[2)]	kg Pe	7,96E-04	1,93E-05	2,84E-04	1,10E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,04E-07	8,63E-07	1,06E-06	4,35E-05	-6,23E-03
EP-marine	kg Ne	3,12E-03	2,78E-04	6,67E-04	4,07E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,51E-05	1,20E-05	1,62E-05	9,70E-05	-1,16E-02
EP-terrestrial	mol Ne	3,33E-02	3,03E-03	6,75E-03	4,31E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,65E-04	1,30E-04	1,43E-04	9,87E-04	-1,18E-01
POCP ("smog")[3)]	kg NMVOCe	1,45E-02	1,25E-03	2,43E-03	1,82E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,93E-05	5,15E-05	4,50E-05	3,13E-04	-3,42E-02
ADP-minerals & metals[4)]	kg Sbe	1,32E-05	6,93E-07	1,65E-05	3,04E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,29E-09	3,64E-08	1,88E-08	4,00E-06	-5,91E-06
ADP-fossil resources	MJ	5,55E+01	3,60E+00	1,03E+01	6,95E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,72E-02	1,56E-01	1,10E-01	9,38E-01	-1,12E+02
Water use[5)]	m^3e depr.	6,05E-01	1,78E-02	2,24E-01	8,47E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,18E-04	7,22E-04	2,64E-03	2,17E-02	-1,47E+00

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

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	2,63E-07	2,49E-08	2,86E-08	3,17E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	9,25E-10	8,80E-10	7,30E-10	1,15E-08	-5,13E-07
Ionizing radiation[6)]	kBq U235e	4,44E-02	3,14E-03	2,51E-02	7,27E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,09E-05	1,26E-04	2,48E-04	4,22E-03	4,13E-03
Ecotoxicity (freshwater)	CTUe	8,26E+00	5,10E-01	1,45E+01	2,33E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,60E-03	2,46E-02	4,40E+01	6,90E-01	-2,05E+01
Human toxicity, cancer	CTUh	2,85E-09	4,10E-11	3,87E-10	3,28E-09	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,71E-13	1,89E-12	5,11E-12	5,61E-11	-2,83E-09
Human tox. non-cancer	CTUh	2,65E-08	2,33E-09	9,74E-09	3,86E-08	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,87E-12	9,74E-11	1,02E-09	3,61E-09	-9,74E-08
SQP[7)]	-	7,13E+00	3,63E+00	3,76E+00	1,45E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,30E-03	9,29E-02	1,68E-01	1,02E+00	-1,69E+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	1,62E+00	4,94E-02	1,24E+00	2,90E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,99E-04	2,13E-03	-5,23E-02	-1,06E-02	-4,55E+00
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-8,59E-02
Total use of renew. PER	MJ	1,62E+00	4,94E-02	1,24E+00	2,90E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,99E-04	2,13E-03	-5,23E-02	-1,06E-02	-4,63E+00
Non-re. PER as energy	MJ	5,55E+01	3,60E+00	1,00E+01	6,92E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,72E-02	1,56E-01	6,82E-02	7,11E-01	-1,12E+02
Non-re. PER as material	MJ	0,00E+00	0,00E+00	3,24E-01	3,24E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	-7,78E-02	-2,46E-01	-2,99E-03
Total use of non-re. PER	MJ	5,55E+01	3,60E+00	1,03E+01	6,95E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,72E-02	1,56E-01	-9,56E-03	4,65E-01	-1,12E+02
Secondary materials	kg	1,10E-01	1,53E-03	1,70E-02	1,29E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,96E-05	6,99E-05	4,75E-05	9,20E-04	4,20E-01
Renew. secondary fuels	MJ	2,15E-04	1,95E-05	5,72E-04	8,07E-04	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,12E-08	8,90E-07	6,44E-07	2,72E-05	-1,77E-04
Non-ren. secondary fuels	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m^3	1,32E-02	5,33E-04	7,38E-03	2,11E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,12E-06	2,06E-05	-9,52E-04	5,34E-04	-3,14E-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	1,04E+00	6,10E-03	8,37E-02	1,13E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,25E-05	2,71E-04	8,31E-04	1,29E-02	-1,56E+00
Non-hazardous waste	kg	3,98E+00	1,13E-01	2,01E+00	6,10E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	7,15E-04	5,09E-03	1,37E+00	4,32E-01	-2,93E+01
Radioactive waste	kg	1,09E-05	7,68E-07	6,19E-06	1,78E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,12E-09	3,09E-08	6,07E-08	1,03E-06	1,90E-06

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	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	0,00E+00	0,00E+00	1,32E-01	1,32E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	2,56E-01	0,00E+00	0,00E+00
Materials for energy rec	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	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	MND	MND	MND	MND	MND	MND	MND	MND	MND	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	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy – Heat	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	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	4,48E+00	2,47E-01	8,31E-01	5,55E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,59E-03	1,10E-02	6,68E-03	1,70E-01	-1,07E+01
Ozone depletion Pot.	kg CFC_{-11}e	5,44E-08	2,93E-09	1,12E-08	6,85E-08	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,37E-11	1,24E-10	9,55E-11	5,83E-10	-2,85E-08
Acidification	kg SO_2e	1,55E-02	6,47E-04	3,19E-03	1,94E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	2,29E-05	2,83E-05	2,83E-05	5,36E-04	-5,86E-02
Eutrophication	kg PO_4^3e	1,60E-03	1,58E-04	7,95E-04	2,55E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	5,34E-06	6,89E-06	1,88E-05	6,38E-05	-5,97E-03
POCP (“smog”)	kg C_2H_4e	1,73E-03	5,76E-05	2,27E-04	2,01E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,71E-06	2,54E-06	2,20E-06	3,18E-05	-3,89E-03
ADP-elements	kg Sbe	1,27E-05	6,76E-07	1,63E-05	2,97E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	1,26E-09	3,56E-08	1,82E-08	3,99E-06	-5,13E-06
ADP-fossil	MJ	5,48E+01	3,55E+00	9,94E+00	6,83E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	4,68E-02	1,54E-01	1,07E-01	8,72E-01	-1,12E+02

ENVIRONMENTAL IMPACTS – GWP-GHG

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG[9)]	kg CO_2e	4,51E+00	2,48E-01	8,26E-01	5,58E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,61E-03	1,11E-02	6,61E-03	1,67E-01	-1,08E+01

9) This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013). In addition, the characterisation factors for the flows - CH4 fossil, CH4 biogenic and Dinitrogen monoxide - were updated in line with the guidance of IES PCR 1.2.5 Annex 1. This indicator is identical to the GWP-total of EN 15804:2012+A2:2019 except that the characterization factor for biogenic CO2 is set to zero.

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Market for electricity, low voltage (Reference product: electricity, low voltage)
Electricity CO2e / kWh	0,9
District heating data source and quality	Heat production, propane, at industrial furnace >100kW (Reference product: heat, district or industrial, other than natural gas)
District heating CO2e / kWh	0,0945

End of life scenario documentation

Scenario information	Value
Collection process – kg collected separately	0
Collection process – kg collected with mixed waste	1
Recovery process – kg for re-use	0
Recovery process – kg for recycling	0,75
Recovery process – kg for energy recovery	0
Disposal (total) – kg for final deposition	0,25
Scenario assumptions e.g. transportation	Transport distance to waste processing facility assumed to be 50km.

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15802+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez
Tool verification validity: 27 March 2025 - 26 March 2028

Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited
10.08.2025