



Environmental Product Declaration

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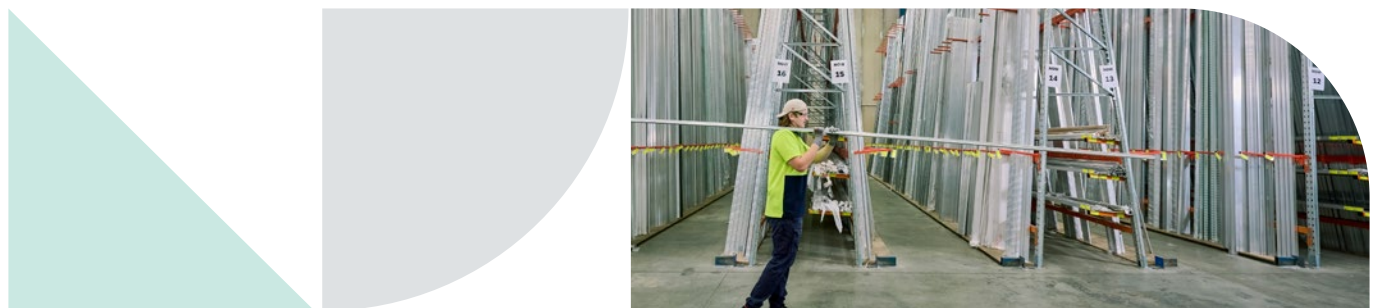
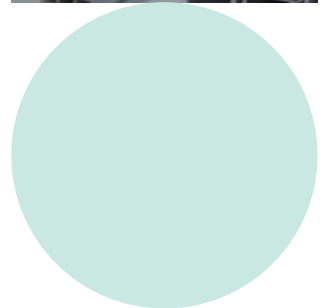
EPD of multiple products, based on the average results of the product group.

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

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VERSION HISTORY

Original Version of the EPD, 2026-04-28

General Information

PROGRAMME INFORMATION



THE INTERNATIONAL EPD® SYSTEM

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PRODUCT CATEGORY RULES (PCR)

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)

Product Category Rules (PCR): PCR 2019: Construction Products, version 2.0.1 (valid until: 2030-04-07)
 UN CPC 41532

PCR review was conducted by: The Technical Committee of the International EPD® System.
 A full list of members available on environdec.com
 The review panel may be contacted via support@environdec.com.

Review chair: Rob Rouwette (chair): start2see
 Noa Meron (co-chair): thinkstep

THIRD-PARTY VERIFICATION

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

Individual EPD verification without a pre-verified LCA/EPD tool

Third-party verifier: Claudia A. Peña, PINDA LCT SpA, Chile

Approved by: International EPD System

Procedure for follow-up of data during EPD validity involves third party verifier Yes 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 the EPD Owner

OWNER OF THE EPD



Owner: Capral Aluminium
Address: 71 Ashburn Rd,
Bundamba QLD, 4304,
Australia
Website: capral.com.au
Contact: Marc Banks
Marc.Banks@capral.com.au

LCA PRACTITIONER



Practitioner: Lifecycles (Life Cycle Strategies Pty Ltd)
Address: 4/30-34 Oxford St
Collingwood VIC 3066,
Australia
Website: lifecycles.com.au
Phone: +61 03 9417 1190
Email: info@lifecycles.com.au

About Capral

Capral Aluminium is Australia's largest manufacturer and distributor of aluminium extrusions, with a history spanning more than 90 years.

Proudly Australian, Capral operates a national network of manufacturing plants and distribution centres, supplying extruded aluminium and solutions to customers across construction, transport, marine, renewable energy and industrial sectors. With integrated capabilities spanning extrusion, finishing and distribution, Capral delivers consistent quality, reliability and service at scale.



An Integrated Aluminium Supplier

Capral's integrated supply model ensures quality control, efficiency and consistency across every stage of production.

Extrusion

Aluminium extrusion is undertaken at Capral's Australian manufacturing facilities, producing a wide range of profiles to suit architectural and industrial applications.

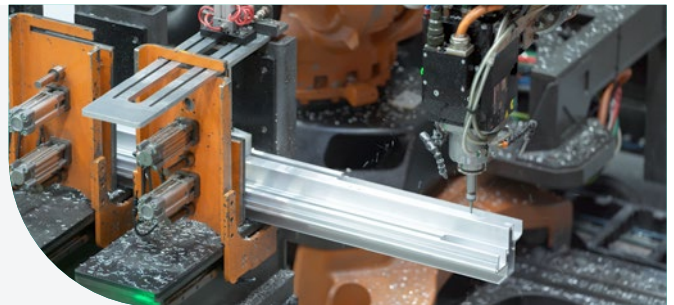


Finishing

Capral operates powder coating facilities co-located at extrusion and distribution sites delivering high-quality finishes that meet Australian Standards and project-specific requirements.

Fabrication Support

Value-add services including cutting, machining and kit preparation support Australian manufacturers with efficient production and reduced onsite handling.



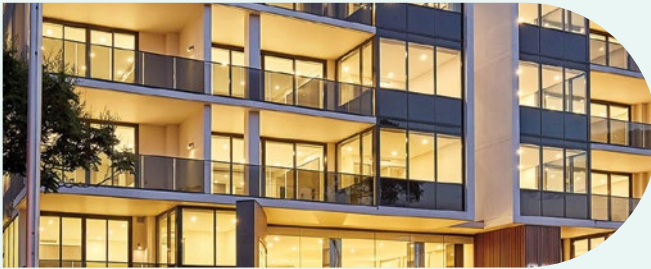
Distribution

A national distribution network ensures reliable supply across metropolitan and regional Australia.

Supporting Australian Manufacturing Industries

Capral supports a wide range of Australian manufacturing and construction industries with aluminium extrusions designed for performance and long-term durability.

Applications span residential and commercial building systems, transport and marine, general manufacturing and renewable energy infrastructure. Each solution is engineered to meet specific performance, compliance and lifecycle requirements, while supporting efficient material use and outcomes. Capral's national footprint ensures consistent supply and technical support across the country.



Building and Construction

Residential housing, high-rise developments, façades and architectural systems.

Industrial and Manufacturing

Custom profiles and components for general manufacturing and engineered applications.



Transport and Marine

Lightweight, durable aluminium solutions for transport and marine applications.

Renewable Energy and Infrastructure

Aluminium used in projects supporting Australia's transition to a lower-carbon economy.





Lower-carbon Aluminium

Capral's LocAl® lower-carbon aluminium offers a reduced embodied carbon option for customers looking to minimise the environmental impact of their projects.

Available across Capral's extrusion range and standard in Capral Building Systems products, LocAl® enables the specification of lower-carbon aluminium without the need to alter system design, performance, or fabrication processes.

Product Information

PRODUCT NAME

Extruded aluminium profile

UN CPC CODE

UN CPC 41532 Bars, rods and profiles, of aluminium

OTHER CODES FOR PRODUCT CLASSIFICATION

ANZSIC 2142 – Aluminium Rolling, Drawing, Extruding NACE Rev. 2 24.42 – Aluminium production

VISUAL REPRESENTATION



Example of aluminium extrusion

PRODUCT IDENTIFICATION

Capral 'LocAl – AB' mill finish extruded aluminium profiles, manufactured by Capral Aluminium at Bremer Park, Queensland, from LocAl® lower-carbon primary aluminium billet sourced from Aluminium Bahrain. Profiles are supplied mill finish (no secondary surface treatment) and form the standard extrusion input for Capral's Building Systems product ranges: Urban, UrbanPlus, UrbanComfort, AGS, Artisan, and Futureline.

PRODUCT DESCRIPTION

Capral LocAl® is a lower-carbon aluminium offer designed to support more sustainable manufacturing and construction outcomes. It provides aluminium extrusions with reduced embodied carbon while maintaining the performance, quality and compliance expected of Capral products.

NAME AND LOCATION OF PRODUCTION SITE(S)

Bremer Park, Queensland, Australia



Capral Building Systems Products

Capral's Building Systems division develops and supplies proprietary aluminium window, door, and façade systems for residential and commercial applications.

All Capral Building Systems from the ranges below are extruded as standard from the LocAl® lower-carbon aluminium range.

Capral works closely with architects, designers and fabricators to deliver compliant, high-performing systems that are efficient to specify, manufacture and install.

- ▶ Tested to Australian Standards
- ▶ Detailed Specification support
- ▶ National fabricator network
- ▶ Extruded as standard from LocAl® lower-carbon aluminium



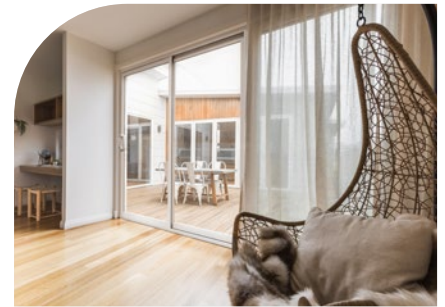
urban™ 
RESIDENTIAL

A standard range of window and door systems designed for residential applications.



urbanplus™ 
DESIGNER RESIDENTIAL

A high-performance range of window and door systems delivering enhanced strength, performance and contemporary architectural styling.



urbancomfort™ 
THERMAL RESIDENTIAL

A thermally broken window and door system designed to improve energy efficiency and indoor comfort across Australian climate conditions.



ags™ 
COMMERCIAL

A commercial window, door and framing system engineered for medium to high-rise applications, delivering strength, performance and design flexibility.



artisan™ 
ARCHITECTURAL

A premium architectural window and door system designed to deliver high-performance outcomes with refined aesthetics and large-format capability.



futureline™ 
THERMAL ARCHITECTURAL

A thermally broken glazing system developed to meet increasing energy efficiency requirements while maintaining architectural performance and design flexibility.

Content Declaration

For 1kg of aluminium extrusion

PRODUCT CONTENT	MASS, KG	POST-CONSUMER RECYCLED MATERIAL, MASS-% OF PRODUCT	BIOGENIC MATERIAL, MASS-% OF PRODUCT	BIOGENIC MATERIAL, KG C/PRODUCT OR DECLARED UNIT
Virgin aluminium	0.95 - 1	0%	0%	0
Pre-consumer aluminium scrap	0 - 0.03	0%	0%	0
Alloys	0 - 0.02	0%	0%	0
TOTAL	1	0%	0%	0

PACKAGING MATERIALS	MASS, KG	MASS-% (VERSUS THE PRODUCT)	BIOGENIC MATERIAL, KG C/PRODUCT OR DECLARED UNIT
Linear low-density polyethylene (LLDPE) shrinkwrap	0.00028	<1%	0
LDPE film	0.0057	<1%	0
Polyfoam	7.80E-05	<1%	0
PET strapping	0.00013	<1%	0
Tape	4.30E-05	<1%	0
Cardboard strips and angles	0.066	6.60%	0.028
Timber bases	0.0026	<1%	0.0012
Timber cleats	0.022	2.20%	0.0097
TOTAL	0.097	<10%	0.039

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

Capral's aluminium products do not contain substances in the Candidate List of Substances of Very High Concern in the European Chemicals Agency in concentrations >0.1% of the weight of the product.

LCA Information

DECLARED UNIT

One kilogram (kg) of Capral 'LocAl – AB' mill finish extruded aluminium profile and its packaging.

TIME REPRESENTATIVENESS

2024-01-01 – 2024-12-31

GEOGRAPHICAL SCOPE

Aluminium billet is sourced from Bahrain for A1, aluminium scrap is sent to Korea and Bahrain for remelt. All other steps are modelled for Australia.

DATABASE(S) AND LCA SOFTWARE USED

SimaPro® LCA software version 10.2.0.3 was used for the LCA modelling and calculation of impacts. All global generic models are sourced from ecoinvent version 3.11 [2]. Australian energy use models are based on AusLCI version 2.47 modified for compliance against EN 15804 [3]. Both databases include resource, waste and output flows as required under EN 15804. Background data is less than 10 years old or has been updated within that timeframe.

DESCRIPTION OF SYSTEM BOUNDARIES

This system boundaries considered by the EPD are cradle-to-gate with options plus end-of-life stages (modules A1-A3, A5, C1-C4, D).

The system boundary includes:

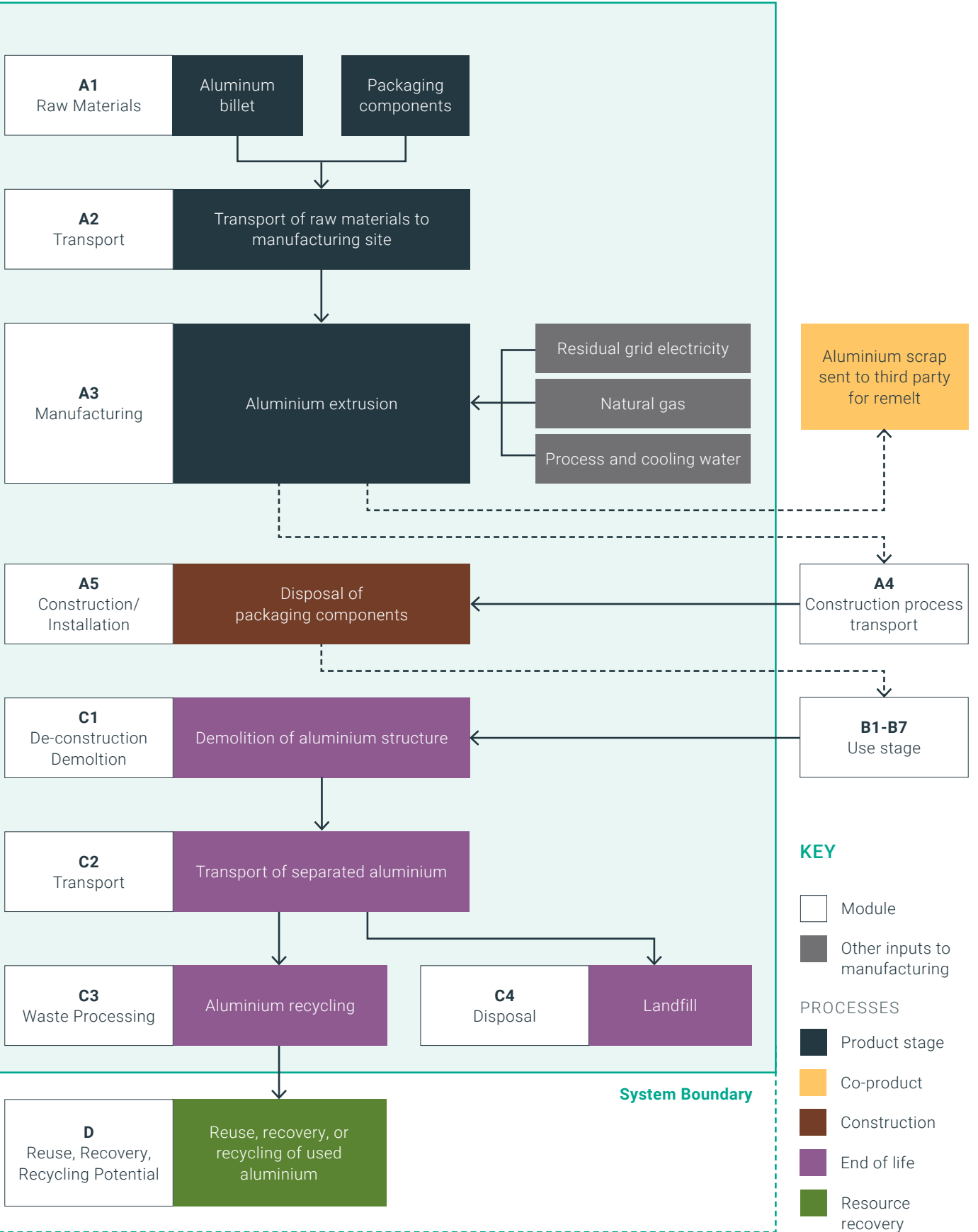
- ▶ **Module A1:** Production/extraction of raw materials to manufacture the primary aluminium and packaging components. This includes the production of the primary aluminium as well as all the packaging components i.e. timber lengths, cardboard strips, LDPE film for product wrapping and foam for protection. Note that the aluminium billet is sourced from Aluminium Bahrain, and is not produced by Capral.
- ▶ **Module A2:** Transport of raw material to the manufacturing plant.
- ▶ **Module A3:** Includes the electricity (residual grid mix) required for the extruder and other plant equipment. Scrap aluminium is exported for remelting.

The extrusion process following the supply of the aluminium billet is consistent between all product dimensions.

- ▶ **Module A5:** Includes end-of-life processes for packaging including the release of any stored biogenic carbon. All packaging components are assumed to be sent to landfill from the construction site.
- ▶ **Module C:** Demolition of the construction at the end-of-life of the aluminium component (C1), transportation of separated aluminium waste (C2), waste processing (recycling – C3) and disposal (landfilling – C4).
- ▶ **Module D:** Reuse-recovery-recycling potential. Starting from the end-of-waste state, this module shows the benefit/impact from the net recycling of aluminium.



PROCESS FLOW DIAGRAM



EXCLUDED LIFE CYCLE STAGES

Impacts from the transport to construction site, from use to the end of the use stage (A4, B1-B7) are not included as this is best modelled at the specific construction project level.

Any excluded flows must fall below the cut-off threshold for this study (below 1% of any impact category included in the LCA). Only particularly minor inputs expected to be well below this threshold were not considered. Capral's extrusion production equipment and personnel related activities are non-attributable and excluded from the system boundary. There are no losses at any stage, as scrap and loss are captured

INFRASTRUCTURE AND CAPITAL GOODS

Infrastructure has been included in the calculated results of this study, for all life cycle stages, where they are part of generic LCI datasets used in AusLCI V2 EN15804, and Ecoinvent 3.11 EN15804. This includes distribution network infrastructure in the electricity processes, as well as the industrial furnace used to burn natural gas. The background LCI datasets also include factories that produce the materials used in packaging. Capral's factory for extrusion, and capital equipment inside their factory has not been included in the result calculations, however energy use for these have been captured in the total electricity use modelled.

Downstream data (Modules A5, C1-C4, D)

The modelling of downstream processes once the extruded aluminium profile leaves the manufacturing facility, is used on site during construction, and reaches its end-of-life is described below.

MODULE A5

It is assumed that the packaging materials used to transport the extruded aluminium reach its end-of-life in module A5. This module is included for biogenic carbon accounting purposes, to balance out the biogenic carbon stored in the relevant packaging components. The primary packaging components with biogenic carbon are the cardboard strips and angles, and the timber bases and cleats. All packaging components are assumed to go to landfill at the construction stage. This is considered a conservative approach. Indeed, decomposition of timber product in landfill will result in methane emissions which would not occur with other end-of-life scenarios such as composting, thus resulting in larger impacts for indicators such as Global Warming.

PRODUCT END-OF-LIFE

When the aluminium product reaches its end-of-life²¹ it is assumed to be collected for recycling or go to landfill, as these are the most likely scenarios for Capral's extruded aluminium at the end-of-life. Aluminium is routinely recycled in Australia. In accordance with the requirements of the Construction Product PCR, the output flow of material to recycling was determined using the R2 ratio from the Product Environment Footprint (PEF). In the case of aluminium (buildings e.g. windows and doors), this ratio is reported as 0.90, meaning that the output flow of material to recycling is estimated as 0.9 kg/kg of product

Therefore, the main scenario modelled considers that 90% of the aluminium extrusions are recycled at end-of-life and 10% end up in landfill. Alternative result sets represent a case scenario where 100% of the ends up recycled, and 100% ends up in landfill. These scenarios are currently in use and are the most probable scenarios for the end-of-life of extruded aluminium products.

MODULE D

Modelling of module D relies on the estimated net flows of recovered materials which should be considered whether positive or negative. In this case, it does not include the effects associated with landfilling or recycling, which are reported in Module C3 and C4.

Once a material has reached its end-of-waste state, the recovered material can be used in a subsequent life cycle as a material input. In this case, the end-of-waste stage is reached once a recycled aluminium billet has been produced. At this point, it is assumed that the recycled material will be able to displace an equivalent amount of virgin material, thus reducing the demand for virgin material overall. This net displacement, accounting for secondary material inputs and outputs across the life cycle, is what is being reported here in Module D.

Table 1 summarises the end-of-life parameters for Capral’s aluminium extrusions for the main scenario.

Table 1 Summary of end-of-life parameters per declared unit (1 kg of extruded aluminium profile)

PROCESSES	
Collection process specified by type	0 kg collected separated
	1 kg collected with mixed construction waste
Recovery system specified by type	0 kg for re-use
	0.9 kg for recycling
	0 kg for energy recovery
Disposal specified by type	0.1 kg product or material for final deposition
Assumptions for scenario development	<ul style="list-style-type: none"> ▶ Transportation to recycling centre/landfill – 50-80km. ▶ Transport from recycling centre to aluminium processor – 850km.

ALLOCATION

Allocation of co-products

In this LCA, allocation of co-products is used to assign a small amount of impact to the generation of pre-consumer aluminium scrap. Capral sells its scrap aluminium to smelters for remelt. An economic allocation was therefore applied to distinguish the effects of producing extruded aluminium from the effects of producing scrap. This was conducted based on the value of material produced (i.e. economic allocation). The value of extruded aluminium and aluminium scrap was based on primary data from Capral.

Data quality assessment

The LCA is based on data collected by Capral for its Bremer Park and Campbellfield sites for the calendar year 2024. Campbellfield water data was used as a proxy as water data for Bremer Park was unavailable. The products assessed are representative of Capral LocAl – AB mill finish aluminium billet from the Bremer Park site for 2024. The EPD uses background data from AusLCI V2 EN15804 (2025) and Ecoinvent 3.11 EN15804 (2024).

Table 2 below summarise the key parameters used to assess the quality of the data used in the analysis. The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

Table 2 Declaration of sources and share of primary data

PROCESS	SOURCE TYPE	SOURCE	REFERENCE YEAR	DATA CATEGORY	SHARE OF PRIMARY DATA, OF GWP-GHG RESULTS FOR A1-A3
Production of primary aluminium	EPD	EPD-IES-0025466:001	2025	Primary data, secondary data	66%
Raw material transport	Database	Ecoinvent 3.11 EN15804	2024	Primary data	1%
Extrusion electricity	Database	AusLCI 2.47 EN15804	2025	Primary data	5%
Extrusion natural gas	Database	AusLCI 2.47 EN15804	2025	Primary data	2%
Production of packaging	Database	Ecoinvent 3.11 EN15804	2024	Primary data	1%
Total share of primary data, of GWP-GHG results for A1-A3					75%

The quality of key datapoints was also assessed using the data quality level and criteria from the UN Environmental Global Guidance on LCA database development. The most critical aspects of the model, primary aluminium production and extrusion data, were modelled from good to very good quality data in terms of time, geography, and technology representativeness. As the EPD source for the primary aluminium was published in 2025 and is the same aluminium used by Capral in their process from the exact aluminium smelter, hence the time, geographical, and technology coverage is 'very good'. This process is the main contributor to the GWPT impact of Capral's product. The LCA model of the upstream EPD complies with the rules to which the downstream EPD is verified.

ELECTRICITY MODELLING (MODULE A3)

The LocAl - AB aluminium is only extruded in Bremer Park, QLD, therefore the electricity model is the Queensland residual supply mix, which has an associated GWP-GHG emission factor of 0.85 kg CO₂ eq./kWh.

Impact assessment categories and characterisation models

This EPD includes all mandatory indicators from EN15804:2012+A2:2019+AC:2021 (EN 15804+A2 for short) and other additional indicators, using EF 3.1 as the reference package. The list of indicators considered is summarised below in Table 3, Table 4, and Table 5.

Table 3 Mandatory potential environmental impact indicators according to EN 15804:2012+A2:2019

INDICATOR	ABBREVIATION	DESCRIPTION	CHARACTERISATION MODEL
Global warming potential – fossil	GWPF		
Global warming potential – biogenic	GWPB	Measured in kg of carbon dioxide equivalence (kg CO ₂ eq.). This is governed by the increased concentration of gases in the atmosphere that trap heat and lead to increasing global temperatures. These gases are principally carbon dioxide, methane and nitrous oxide.	IPCC model based on 100-year timeframe based on IPCC 2021 [4]
Global warming potential - land use/ land use change	GWPL		
Global warming potential - total	GWPT		
Ozone depletion potential	ODP	Measured in kg CFC 11 eq. This calculates the destructive effects in the stratospheric ozone layer over a time horizon of 100 years.	Steady-state ODPs [5]
Acidification potential	AP	Measured in mol H+ eq. This assesses the change in critical load exceedance of the sensitive area in terrestrial and main freshwater ecosystems, to which acidifying substances deposit.	Accumulated exceedance, CML 2001 non-baseline (fate not included) [6], [7]
Eutrophication potential – freshwater	EPF	Measured in kg of phosphorus equivalents (kg P eq.). Expresses the degree to which the emitted nutrients reach the freshwater end compartment.	EUTREND model [8], as implemented in ReCiPe
Eutrophication potential – marine	EPM	Measured in kg of nitrogen equivalents (kg N eq.). Expresses the degree to which the emitted nutrients reach the marine end compartment.	EUTREND model [8], as implemented in ReCiPe
Eutrophication potential – terrestrial	EPT	Measured in mol N eq. This expresses the degree to which nutrients reach sensitive terrestrial environments, resulting in changes in species composition, such as increased invasive species, reed growth, and dieback in tree species.	Accumulated Exceedance based on Seppälä, Posch [6], and Posch, Seppälä [7]

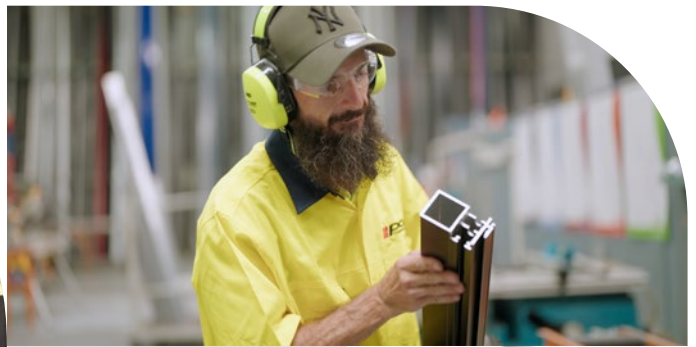


Table 3 Mandatory potential environmental impact indicators according to EN 15804:2012+A2:2019 (continued)

INDICATOR	ABBREVIATION	DESCRIPTION	CHARACTERISATION MODEL
Photochemical ozone creation potential	POCP	Measured in kg NMVOC eq. This measures harmful air pollutant creation by primary pollutants such as nitrous oxides and volatile organic compounds when they interact under the influence of the sun and form chemicals toxic to humans and ecosystems, including ozone.	LOTOS-EUROS [9]
Abiotic depletion potential – minerals & metals*	ADPE	Measured in mg of antimony equivalence (kg Sb eq.). This measures the depletion of minerals based on the concentration of currently economic reserves and rate of de-accumulation.	CML-IA V4.8 [10]
Abiotic depletion potential – fossil fuels*	ADPF	Measured in MJ Net Calorific Value (NCV). This measures the depletion of fossil fuels based on energy content.	CML-IA V4.8 [10]
Water deprivation potential*	WDP	Measured in cubic metres of water equivalence deprived (m ³ H ₂ O eq.). This quantifies the relative available water remaining per area once the demand of humans and aquatic systems has been met.	Available water remaining (AWARE) method [11]

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of the results are high and as there is limited experience with the indicator.

Table 4 Additional mandatory and voluntary indicators.

INDICATOR	ABBREVIATION	UNITS	CHARACTERISATION MODEL
Potential environmental impacts			
Global warming potential – excluding biogenic uptake, emissions, and storage	GWP-GHG	kg CO ₂ eq.	IPCC model based on 100-year timeframe based on IPCC 2013
Particulate Matter emissions	PM	Disease incidence (due to kg of PM2.5 emitted).	SETAC-UNEP [12]
Ionising Radiation – human health**	IRP	kBq U-235-eq.	Human health effect model as developed by Dreicer, Tort [13] update by Frischknecht, Braunschweig [14]
Eco-toxicity – freshwater*	ETPF	Comparative Toxic Unit for ecosystems (CTUe)	USEtox version 2.1 (Fantke et al. [15] and Rosenbaum et al [16]), adapted as in Saouter et al. [17]
Human toxicity – cancer*	HTPC	Comparative Toxic Unit for human (CTUh)	USEtox version 2.1 (Fantke et al. [15] and Rosenbaum et al [16]), adapted as in Saouter et al. [17]
Human toxicity – non-cancer*	HTPNC	CTUh	USEtox version 2.1 (Fantke et al. [15] and Rosenbaum et al [16]), adapted as in Saouter et al. [17]
Land use related impacts / soil quality*	SQP	Dimensionless	Soil quality index based on LANCA

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of the results are high and as there is limited experience with the indicator.

**Disclaimer: 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.

Table 5 Use of resources, waste production, and output flows.

INDICATOR	ABBREVIATION	UNITS	
Resource use			
Primary energy resources – Renewable	Use as energy carrier	PERE	MJ, net calorific value
	Used as raw materials	PERM	
	Total	PERT	
Primary energy resources – Non-renewable	Use as energy carrier	PENRE	
	Used as raw materials	PENRM	
	Total	PENRT	
Use of secondary materials	SM	kg	
Use of renewable secondary fuels	RSF	MJ, net calorific value	
Use of non-renewable secondary fuels	NRSF	MJ, net calorific value	
Net use of fresh water	FW	m ³	
Waste production			
Hazardous waste disposed	HWD	kg	
Non-hazardous waste disposed	NHWD	kg	
Radioactive waste disposed	RWD	kg	
Output flows			
Components for reuse	CRU	kg	
Material for recycling	MFR	kg	
Materials for energy recovery	MER	kg	
Exported energy – electrical	EEE	MJ per energy carrier	
Exported energy – thermal	EET	MJ per energy carrier	

	PRODUCT STAGE			DISTRIBUTION/ INSTALLATION STAGE		USE STAGE							END-OF-LIFE STAGE				BEYOND PRODUCT LIFE CYCLE
	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	ND	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	BH	AU/ BH	AU	-	AU	-	-	-	-	-	-	-	AU	AU	AU	AU	AU
Share of primary data	75%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-



Environmental Performance

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. The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

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

MANDATORY IMPACT CATEGORY INDICATORS ACCORDING TO EN 15804

Results for one kilogram (kg) of Capral 'LocAl – AB' mill finish extruded aluminium profile plus its packaging

INDICATOR	UNIT	MODULE A1-A3	MODULE A5	MODULE C1	MODULE C2	MODULE C3	MODULE C4	MODULE D
		Raw material supply, transport and manufacturing	Construction / Installation	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse-recovery-recycling potential
GWPT	kg CO ₂ eq.	1.2E+01	1.9E-01	4.0E-04	1.6E-02	9.8E-02	6.9E-04	-5.8E+00
GWPF	kg CO ₂ eq.	1.3E+01	1.9E-03	4.0E-04	1.6E-02	9.8E-02	6.3E-04	-5.8E+00
GWPB	kg CO ₂ eq.	-1.2E-01	1.9E-01	8.0E-08	5.0E-06	4.9E-05	6.1E-05	7.7E-03
GWPL	kg CO ₂ eq.	3.7E-03	4.7E-07	4.1E-08	7.3E-06	4.3E-05	2.0E-07	-1.7E-02
ODP	kg CFC 11 eq.	2.3E-10	3.0E-13	3.1E-14	3.0E-12	1.6E-11	2.2E-13	-2.5E-09
AP	mol H+ eq.	4.0E-02	1.3E-05	3.6E-06	5.5E-05	5.3E-04	5.1E-06	-4.0E-02
EPF	kg P eq.	1.1E-04	1.3E-07	1.3E-08	1.8E-06	6.9E-06	6.7E-08	-1.9E-03
EPM	kg N eq.	1.1E-02	1.6E-05	1.7E-06	1.8E-05	1.5E-04	4.3E-06	-6.7E-03
EPT	mol N eq.	1.2E-01	2.6E-05	1.8E-05	1.9E-04	1.6E-03	2.4E-05	-7.0E-02
POCP	kg NMVOC eq.	3.2E-02	4.1E-05	5.4E-06	7.5E-05	6.5E-04	7.1E-06	-2.2E-02
ADPE*	kg Sb eq.	9.6E-06	3.0E-09	1.4E-10	5.3E-08	2.7E-07	8.0E-10	-7.5E-05
ADPF*	MJ (NCV)	1.7E+02	1.6E-02	5.2E-03	2.2E-01	1.4E+00	7.8E-03	-6.0E+01
WDP*	m ³ H ₂ O eq.	8.1E-01	8.0E-05	1.6E-05	1.3E-03	7.7E-03	4.4E-05	-2.0E+00

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

ADDITIONAL MANDATORY AND VOLUNTARY IMPACT CATEGORY INDICATORS

Results for one kilogram (kg) of Capral 'LocAl – AB' mill finish extruded aluminium profile including packaging

INDICATOR	UNIT	MODULE A1-A3	MODULE A5	MODULE C1	MODULE C2	MODULE C3	MODULE C4	MODULE D
		Raw material supply, transport and manufacturing	Construction / Installation	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse-recovery- recycling potential
GWP-GHG1	kg CO ₂ eq.	1.3E+01	8.7E-02	4.0E-04	1.6E-02	9.8E-02	6.3E-04	-5.8E+00
PM	Disease incidence	4.6E-07	1.6E-10	1.0E-10	1.3E-09	1.0E-08	1.4E-10	-5.0E-07
IRP**	kBq U-235 eq.	1.7E-02	1.6E-05	2.2E-06	1.8E-04	1.2E-03	1.0E-05	-1.4E-01
ETPF*	CTUe	2.6E+01	1.0E-02	2.8E-04	4.1E-02	1.6E-01	1.2E-02	-3.7E+01
HTPC*	CTUh	1.1E-09	4.6E-13	4.1E-14	2.7E-12	1.4E-11	2.0E-13	-4.3E-09
HTPNC*	CTUh	5.3E-08	1.9E-10	6.4E-13	1.4E-10	4.6E-10	1.3E-11	-5.9E-08
SQP*	Dimensionless	1.3E+01	4.6E-02	3.4E-04	1.3E-01	1.3E+00	5.5E-02	-1.3E+01

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of the results are high and as there is limited experience with the indicator

**Disclaimer: 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.



RESOURCE USE INDICATORS

Results for one kilogram (kg) of Capral 'LocAl – AB' mill finish extruded aluminium profile including packaging

INDICATOR	UNIT	MODULE A1-A3	MODULE A5	MODULE C1	MODULE C2	MODULE C3	MODULE C4	MODULE D
		Raw material supply, transport and manufacturing	Construction / Installation	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse-recovery-recycling potential
Resource use*								
PERE	MJ NCV	3.0E+00	2.7E-04	3.3E-05	3.1E-03	1.9E-02	1.8E-04	-6.3E+00
PERM	MJ NCV	1.4E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PERT	MJ NCV	4.4E+00	2.7E-04	3.3E-05	3.1E-03	1.9E-02	1.8E-04	-6.3E+00
PENRE	MJ NCV	1.7E+02	1.6E-02	5.2E-03	2.2E-01	1.4E+00	7.8E-03	-6.0E+01
PENRM	MJ NCV	2.7E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PENRT	MJ NCV	1.7E+02	1.6E-02	5.2E-03	2.2E-01	1.4E+00	7.8E-03	-6.0E+01
SM	kg	1.1E-01	8.0E-06	2.1E-06	9.9E-05	5.9E-04	4.9E-06	-1.1E-01
RSF	MJ NCV	7.1E-03	9.8E-08	5.6E-09	1.3E-06	6.6E-06	5.6E-08	-2.3E-04
NRSF	MJ NCV	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
FW	m ³	1.7E-02	1.9E-06	3.7E-07	3.1E-05	1.8E-04	1.0E-06	-4.6E-02
Waste flows								
HWD	kg	1.3E-02	3.9E-05	5.8E-06	5.1E-04	2.2E-03	2.2E-05	-1.3E+00
NHWD	kg	7.9E-01	3.6E-01	8.5E-05	9.9E-03	4.1E-02	5.0E-01	-8.6E+00
RWD	kg	1.1E-04	3.9E-09	5.4E-10	4.4E-08	2.9E-07	2.6E-09	-3.5E-05
Output flows								
CRU	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MFR	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	9.0E-01	0.0E+00	0.0E+00
MER	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
EET	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
EEE	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

* Primary energy indicators were modelled according to Option B, as described in Annex 3 of PCR 2019:14.

Additional LCA results (other environmental performance results) of the product(s)

EPD RESULTS 100% RECYCLING AT END-OF-LIFE

The results of the analysis, assuming 100% landfill at end-of life, are reported in Table 6.

Table 6 Environmental impact indicators, resource flows and other inventory flows, according to EN 15804:2012+A2:2019, 100% recycling scenario.

INDICATOR	UNIT	MODULE A1-A3	MODULE A5	MODULE C1	MODULE C2	MODULE C3	MODULE C4	MODULE D
		Raw material supply, transport and manufacturing	Construction / Installation	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse-recovery-recycling potential
Mandatory potential environmental impact indicator								
GWPT	kg CO ₂ eq.	1.2E+01	1.9E-01	4.0E-04	1.6E-02	1.1E-01	0.0E+00	-6.4E+00
GWPF	kg CO ₂ eq.	1.3E+01	1.9E-03	4.0E-04	1.6E-02	1.1E-01	0.0E+00	-6.4E+00
GWPB	kg CO ₂ eq.	-1.2E-01	1.9E-01	8.0E-08	5.0E-06	5.4E-05	0.0E+00	8.5E-03
GWPL	kg CO ₂ eq.	3.7E-03	4.7E-07	4.1E-08	7.3E-06	4.8E-05	0.0E+00	-1.8E-02
ODP	kg CFC 11 eq.	2.3E-10	3.0E-13	3.1E-14	3.0E-12	1.8E-11	0.0E+00	-2.8E-09
AP	mol H+ eq.	4.0E-02	1.3E-05	3.6E-06	5.5E-05	5.9E-04	0.0E+00	-4.5E-02
EPF	kg P eq.	1.1E-04	1.3E-07	1.3E-08	1.8E-06	7.7E-06	0.0E+00	-2.1E-03
EPM	kg N eq.	1.1E-02	1.6E-05	1.7E-06	1.8E-05	1.6E-04	0.0E+00	-7.4E-03
EPT	mol N eq.	1.2E-01	2.6E-05	1.8E-05	1.9E-04	1.8E-03	0.0E+00	-7.8E-02
POCP	kg NMVOC eq.	3.2E-02	4.1E-05	5.4E-06	7.5E-05	7.2E-04	0.0E+00	-2.5E-02
ADPE*	kg Sb eq.	9.6E-06	3.0E-09	1.4E-10	5.3E-08	3.0E-07	0.0E+00	-8.3E-05
ADPF*	MJ (NCV)	1.7E+02	1.6E-02	5.2E-03	2.2E-01	1.6E+00	0.0E+00	-6.6E+01
WDP*	m ³ H ₂ O eq.	8.1E-01	8.0E-05	1.6E-05	1.3E-03	8.6E-03	0.0E+00	-2.2E+00

Table 6 Environmental impact indicators, resource flows and other inventory flows, according to EN 15804:2012+A2:2019, 100% recycling scenario. (continued)

INDICATOR	UNIT	MODULE A1-A3	MODULE A5	MODULE C1	MODULE C2	MODULE C3	MODULE C4	MODULE D
		Raw material supply, transport and manufacturing	Construction / Installation	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse-recovery-recycling potential
Additional potential environmental impact indicator								
GWP-GHG	kg CO ₂ eq.	1.3E+01	8.7E-02	4.0E-04	1.6E-02	1.1E-01	0.0E+00	-6.4E+00
PM	Disease incidence	4.6E-07	1.6E-10	1.0E-10	1.3E-09	1.1E-08	0.0E+00	-5.5E-07
IRP**	kBq U-235 eq.	1.7E-02	1.6E-05	2.2E-06	1.8E-04	1.3E-03	0.0E+00	-1.6E-01
ETPF*	CTUe	2.6E+01	1.0E-02	2.8E-04	4.1E-02	1.8E-01	0.0E+00	-4.1E+01
HTPC*	CTUh	1.1E-09	4.6E-13	4.1E-14	2.7E-12	1.5E-11	0.0E+00	-4.8E-09
HTPNC*	CTUh	5.3E-08	1.9E-10	6.4E-13	1.4E-10	5.2E-10	0.0E+00	-6.6E-08
SQP*	Dimensionless	1.3E+01	4.6E-02	3.4E-04	1.3E-01	1.5E+00	0.0E+00	-1.4E+01
Resource use								
PERE	MJ NCV	3.0E+00	2.7E-04	3.3E-05	3.1E-03	2.2E-02	0.0E+00	-7.0E+00
PERM	MJ NCV	1.4E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PERT	MJ NCV	4.4E+00	2.7E-04	3.3E-05	3.1E-03	2.2E-02	0.0E+00	-7.0E+00
PENRE	MJ NCV	1.7E+02	1.6E-02	5.2E-03	2.2E-01	1.6E+00	0.0E+00	-6.6E+01
PENRM	MJ NCV	2.7E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PENRT	MJ NCV	1.7E+02	1.6E-02	5.2E-03	2.2E-01	1.6E+00	0.0E+00	-6.6E+01
SM	kg	1.1E-01	8.0E-06	2.1E-06	9.9E-05	6.5E-04	0.0E+00	-1.2E-01
RSF	MJ NCV	7.1E-03	9.8E-08	5.6E-09	1.3E-06	7.3E-06	0.0E+00	-2.5E-04
NRSF	MJ NCV	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
FW	m ³	1.7E-02	1.9E-06	3.7E-07	3.1E-05	2.0E-04	0.0E+00	-5.1E-02

Table 6 Environmental impact indicators, resource flows and other inventory flows, according to EN 15804:2012+A2:2019, 100% recycling scenario. (continued)

INDICATOR	UNIT	MODULE A1-A3	MODULE A5	MODULE C1	MODULE C2	MODULE C3	MODULE C4	MODULE D
		Raw material supply, transport and manufacturing	Construction / Installation	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse-recovery-recycling potential
Waste flows								
HWD	kg	1.3E-02	3.9E-05	5.8E-06	5.1E-04	2.4E-03	0.0E+00	-1.4E+00
NHWD	kg	7.9E-01	3.6E-01	8.5E-05	9.9E-03	4.6E-02	0.0E+00	-9.5E+00
RWD	kg	1.1E-04	3.9E-09	5.4E-10	4.4E-08	3.2E-07	0.0E+00	-3.9E-05
Output flows								
CRU	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MFR	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.0E+00	0.0E+00	0.0E+00
MER	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
EET	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
EEE	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00



EPD RESULTS 100% LANDFILL AT END-OF-LIFE

The results of the analysis, assuming 100% landfill at end-of life, are reported in Table 7.

Table 7 Environmental impact indicators, resource flows and other inventory flows, according to EN 15804:2012+A2:2019, 100% landfill scenario.

INDICATOR	UNIT	MODULE A1-A3	MODULE A5	MODULE C1	MODULE C2	MODULE C3	MODULE C4	MODULE D
		Raw material supply, transport and manufacturing	Construction / Installation	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse-recovery-recycling potential
Mandatory potential environmental impact indicator								
GWPT	kg CO ₂ eq.	1.2E+01	1.9E-01	4.0E-04	1.6E-02	0.0E+00	6.9E-03	0.0E+00
GWPF	kg CO ₂ eq.	1.3E+01	1.9E-03	4.0E-04	1.6E-02	0.0E+00	6.3E-03	0.0E+00
GWPB	kg CO ₂ eq.	-1.2E-01	1.9E-01	8.0E-08	5.0E-06	0.0E+00	6.1E-04	0.0E+00
GWPL	kg CO ₂ eq.	3.7E-03	4.7E-07	4.1E-08	7.3E-06	0.0E+00	2.0E-06	0.0E+00
ODP	kg CFC 11 eq.	2.3E-10	3.0E-13	3.1E-14	3.0E-12	0.0E+00	2.2E-12	0.0E+00
AP	mol H ⁺ eq.	4.0E-02	1.3E-05	3.6E-06	5.5E-05	0.0E+00	5.1E-05	0.0E+00
EPF	kg P eq.	1.1E-04	1.3E-07	1.3E-08	1.8E-06	0.0E+00	6.7E-07	0.0E+00
EPM	kg N eq.	1.1E-02	1.6E-05	1.7E-06	1.8E-05	0.0E+00	4.3E-05	0.0E+00
EPT	mol N eq.	1.2E-01	2.6E-05	1.8E-05	1.9E-04	0.0E+00	2.4E-04	0.0E+00
POCP	kg NMVOC eq.	3.2E-02	4.1E-05	5.4E-06	7.5E-05	0.0E+00	7.1E-05	0.0E+00
ADPE*	kg Sb eq.	9.6E-06	3.0E-09	1.4E-10	5.3E-08	0.0E+00	8.0E-09	0.0E+00
ADPF*	MJ (NCV)	1.7E+02	1.6E-02	5.2E-03	2.2E-01	0.0E+00	7.8E-02	0.0E+00
WDP*	m ³ H ₂ O eq.	8.1E-01	8.0E-05	1.6E-05	1.3E-03	0.0E+00	4.4E-04	0.0E+00

Table 7 Environmental impact indicators, resource flows and other inventory flows, according to EN 15804:2012+A2:2019, 100% landfill scenario. (continued)

INDICATOR	UNIT	MODULE A1-A3	MODULE A5	MODULE C1	MODULE C2	MODULE C3	MODULE C4	MODULE D
		Raw material supply, transport and manufacturing	Construction / Installation	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse-recovery-recycling potential
Additional potential environmental impact indicator								
GWP-GHG	kg CO ₂ eq.	1.3E+01	8.7E-02	4.0E-04	1.6E-02	0.0E+00	6.3E-03	0.0E+00
PM	Disease incidence	4.6E-07	1.6E-10	1.0E-10	1.3E-09	0.0E+00	1.4E-09	0.0E+00
IRP**	kBq U-235 eq.	1.7E-02	1.6E-05	2.2E-06	1.8E-04	0.0E+00	1.0E-04	0.0E+00
ETPF*	CTUe	2.6E+01	1.0E-02	2.8E-04	4.1E-02	0.0E+00	1.2E-01	0.0E+00
HTPC*	CTUh	1.1E-09	4.6E-13	4.1E-14	2.7E-12	0.0E+00	2.0E-12	0.0E+00
HTPNC*	CTUh	5.3E-08	1.9E-10	6.4E-13	1.4E-10	0.0E+00	1.3E-10	0.0E+00
SQP*	Dimensionless	1.3E+01	4.6E-02	3.4E-04	1.3E-01	0.0E+00	5.5E-01	0.0E+00
Resource use								
PERE	MJ NCV	3.0E+00	2.7E-04	3.3E-05	3.1E-03	0.0E+00	1.8E-03	0.0E+00
PERM	MJ NCV	1.4E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PERT	MJ NCV	4.4E+00	2.7E-04	3.3E-05	3.1E-03	0.0E+00	1.8E-03	0.0E+00
PENRE	MJ NCV	1.7E+02	1.6E-02	5.2E-03	2.2E-01	0.0E+00	7.8E-02	0.0E+00
PENRM	MJ NCV	2.7E-01	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
PENRT	MJ NCV	1.7E+02	1.6E-02	5.2E-03	2.2E-01	0.0E+00	7.8E-02	0.0E+00
SM	kg	1.1E-01	8.0E-06	2.1E-06	9.9E-05	0.0E+00	4.9E-05	0.0E+00
RSF	MJ NCV	7.1E-03	9.8E-08	5.6E-09	1.3E-06	0.0E+00	5.6E-07	0.0E+00
NRSF	MJ NCV	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
FW	m ³	1.7E-02	1.9E-06	3.7E-07	3.1E-05	0.0E+00	1.0E-05	0.0E+00

Table 7 Environmental impact indicators, resource flows and other inventory flows, according to EN 15804:2012+A2:2019, 100% landfill scenario. (continued)

INDICATOR	UNIT	MODULE A1-A3	MODULE A5	MODULE C1	MODULE C2	MODULE C3	MODULE C4	MODULE D
		Raw material supply, transport and manufacturing	Construction / Installation	Deconstruction demolition	Transport	Waste processing	Disposal	Reuse-recovery-recycling potential
Waste flows								
HWD	kg	1.3E-02	3.9E-05	5.8E-06	5.1E-04	0.0E+00	2.2E-04	0.0E+00
NHWD	kg	7.9E-01	3.6E-01	8.5E-05	9.9E-03	0.0E+00	5.0E+00	0.0E+00
RWD	kg	1.1E-04	3.9E-09	5.4E-10	4.4E-08	0.0E+00	2.6E-08	0.0E+00
Output flows								
CRU	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MFR	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MER	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
EET	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
EEE	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00



Abbreviations

EN	European Norm (Standard)
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
CEN	European Committee for Standardization
CPC	Central product classification
ND	Not Declared



References

- 1 Aluminium Bahrain B.S.C., Environmental Product Declaration for Aluminium Billet from Aluminium Bahrain. 2025.
- 2 Weidema, B.P., et al., Overview and methodology. Data quality guideline for the ecoinvent database version 3. Ecoinvent Report 1(v3.11). 2024, The ecoinvent Centre: St. Gallen.
- 3 Lifecycles, EN15804 Aligned Australian Life Cycle Inventory Database (AusLCI) version 2.47, Lifecycles & Australian Life Cycle Assessment Society, Editor. 2025: Melbourne.
- 4 IPCC, Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Editor. 2021: Cambridge, United Kingdom and New York, NY, USA. p. 1535.
- 5 World Meteorological Organization (WMO), Scientific Assessment of Ozone Depletion: 2014. Global Ozone Research and Monitoring Project. 2014: Geneva.
- 6 Seppälä, J., et al., Country-dependent characterisation factors for acidification and terrestrial eutrophication based on accumulated exceedance as an impact category indicator (14 pp). The International Journal of Life Cycle Assessment, 2006. 11(6): p. 403-416.
- 7 Posch, M., et al., The role of atmospheric dispersion models and ecosystem sensitivity in the determination of characterisation factors for acidifying and eutrophying emissions in LCIA. The International Journal of Life Cycle Assessment, 2008. 13(6): p. 477.
- 8 Struijs, J., et al., Aquatic eutrophication. ReCiPe 2008 A life cycle impact assessment method which comprises harmonised category indicators at the midpoint and the endpoint level. Report I: Characterisation factors, 2009.
- 9 van Zelm, R., et al., European characterization factors for human health damage of PM10 and ozone in life cycle impact assessment. Atmospheric Environment, 2008. 42(3): p. 441-453.
- 10 Institute of Environmental Sciences (CML), CML-IA Characterisation Factors Version 4.8, U.o. Leiden, Editor. 2016: Leiden, NL.
- 11 Boulay, A.-M., et al., The WULCA consensus characterization model for water scarcity footprints: assessing impacts of water consumption based on available water remaining (AWARE). Int J LCA, 2018. 23(2): p. 368-378.
- 12 Fantke, P., et al., Health impacts of fine particulate matter, in Global guidance for life cycle impact assessment indicators. 2016, SETAC. p. 76-99.
- 13 Dreicer, M., V. Tort, and P. Manen, Nuclear fuel cycle: estimation of physical impacts and monetary valuation for priority pathways. 1995, Centre d'Etude sur l'Evaluation de la Protection dans le Domaine Nucleaire.
- 14 Frischknecht, R., et al., Human health damages due to ionising radiation in life cycle impact assessment. Environmental impact assessment Review, 2000. 20(2): p. 159-189.
- 15 Fantke, P., et al., Health impacts of fine particulate matter, in Global Guidance for Life Cycle Impact Assessment Indicators: Volume 1, R. Frischknecht and O. Jolliet, Editors. 2016, UNEP/SETAC Life Cycle Initiative: Paris. p. 76-99.
- 16 Rosenbaum, R.K., et al., USEtox—the UNEP-SETAC toxicity model: recommended characterisation factors for human toxicity and freshwater ecotoxicity in life cycle impact assessment. The International Journal of Life Cycle Assessment, 2008. 13(7): p. 532-546.
- 17 Saouter, E., et al., Comparing Options for Deriving Chemical Ecotoxicity Hazard Values for the European Union Environmental Footprint, Part II. Integrated Environmental Assessment and Management, 2019. 15(5): p. 796-807.
- 18 EPD International, General Programme Instructions for the International EPD® System. Version 5.0.1. 2025.
- 19 EPD International, PCR 2019:14 Construction products, version 2.0.1. 2025, EPD International AB.
- 20 European Committee for Standardisation (CEN), EN 15804:2012+A2:2019/AC:2021, Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products. 2022.
- 21 European Commission, Product Environmental Footprint Category Rules Guidance Version 6.3 - Annex C. 2018
- 22 International Organization for Standardization, International Standard, ISO 14040, Environmental Management Standard- Life Cycle Assessment, Principles and Framework. 2006: Switzerland.
- 23 International Organization for Standardization, International Standard, ISO 14044, Environmental Management Standard- Life Cycle Assessment, Requirements and Guidelines. 2006: Switzerland.
- 24 UNEP/SETAC Life Cycle Initiative, Global Guidance Principles for life cycle assessment databases: A Basis for Greener Processes and Products. 2011, United Nations Environment Programme and Society of Environmental Toxicology and Chemistry: Paris.
- 25 CEN, 2024. EN 15941:2024, Sustainability of construction works – Data quality for environmental assessment of products and construction work – Selection and use of data. ECO Platform, 2024.
- 26 ECO Platform standards, versions published 2024-12-20. Available on <https://www.eco-platform.org/our-relevant-documents.html>.

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