THE NORTH AMERICAN EPD® SYSTEM

Environmental Product Declaration

In accordance with ISO 14020, ISO 14025:2006, EN 15804:2012+A2:2019/AC:2021 and ISO 21930 for:

Reynolux® Pre-Painted Aluminum

from

Arconic Architectural Products SAS

Licensee:	The North American EPD® System
Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	EPD-IES-0023027:001
Publication date:	2025-05-23
Valid until:	2030-05-23

An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com.

General information

Programme information

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

Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
International EPD® System: *Construction Products Product Category Rules, PCR 2019:14, V1.3.4*
PCR review was conducted by: The Technical Committee of the International EPD System. See www.environdec.com for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.
Life Cycle Assessment (LCA)
LCA accountability: *Gaëlle Guillaume, WAP Sustainability*
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by individual verifier Internal verifier: *Freddy Navarro; LCACHECK S.A.S. de C.V.* Approved by: The 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 registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same 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 equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterization factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD: Arconic Architectural Products SAS

Contact: Reynolux.service@arconic.com

LCA practitioner commissioned by the EPD owner:
WAP Sustainability Consulting, 1701 Market Street Chattanooga TN 37408
info@wapsustainability.com

Description of the organisation: With over 60 years of experience, Arconic Architectural Products SAS (AAPM) is a leading European supplier of coil coated aluminum coils and sheets. Arconic Architectural Products SAS (AAPM) versatile portfolio combines beauty with high performance, delivering durable, lightweight and flexible solutions across many applications in the fields of construction, corporate identity design, transport and industry.

Product-related or management system-related certifications: AAPM is certified according to the international standards ISO 9001, ISO 14001, ISO 45001 and ISO 50001.

Location of production site: Arconic Architectural Products, 2 Rue Marie Curie, 68500 Merxheim, France

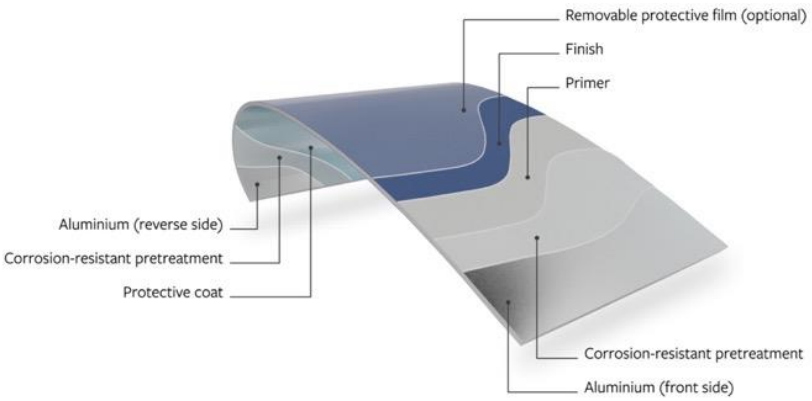
Geographical scope: Europe

Product information

Product name: Reynolux® pre-painted aluminum sheet, Reynolux® pre-painted aluminum coil

Product identification: The product under study represents an average pre-painted aluminum product delivered as either coil or sheet at an average thickness and produced by AAP Merxheim.

Product description: Reynolux® pre-painted aluminum is a continuous pre-painted aluminum sheet with one to several layers of paint and can also be coated with finishes with a wide variety of colors and coatings. There are a number of advantages of Reynolux® pre-painted aluminum: in addition to UV and weather resistance, it is also easy to process and shape.



UN CPC code: 41534 – Plates, sheets and strip, of aluminium, of a thickness exceeding 0.2 mm

Characteristics	Reynolux® Pre-painted Aluminum	Unit
Thickness	From 0.2 to 2.0	mm
Available width	Up to 2100	mm
Available sheet lengths	Minimum 250	mm
Alloy	1xxx, 3xxx, 4xxx, 5xxx and 8xxx series alloys	N/A

Raw Material Acquisition:
Aluminum coils used at Merxheim are produced by suppliers located in Europe and the rest of the world. A list of all purchased aluminum coils for Merxheim detailing the alloy technical specifications and their volume has been used for the calculation. This was divided by total production volume in kg to derive a raw material use-per-kg of product in the LCA.

Manufacturing:
The aluminum coils received at Merxheim, are cleaned, applied with pre-treatment and coated through a continuous process. The product is sold in coils or cut to length or slit on finishing lines.

Additional product information can be found on the Arconic Architectural Products website: https://www.arconic.com/web/aap-europe/reynolux%C2%AE-pre-painted-aluminium.

Content information

All values are reported according to the declared unit of one kilogram of Reynolux® pre-painted aluminum.

Product components	Weight, in kg	Recycled content in % weight	Biogenic carbon content, in % weight and kg C per declared unit
Aluminum	9.71E-01	39.2%	0%, 0
Paint	2.80E-02	0%	0%, 0
Pre-treatment	1.00E-03	0%	0%, 0
TOTAL	**1.00E+00**	**39.2%**	**0%, 0**

The breakdown between pre- and post-consumer recycled content could not be provided, as suppliers did not have data at this level of detail. Additionally, some variability in these figures is inherent due to the dynamics of the global aluminum scrap market.

Packaging materials	Weight, in kg	Weight % (versus the product)	Biogenic carbon, kg C per declared unit	Biogenic carbon, kg CO_2 per declared unit
Wooden pallets	3.67E-02	3.67%	1.10E-02	4.04E-02
Cardboard packaging	5.96E-03	0.60%	2.57E-03	9.42E-03
Polyethylene film	1.36E-03	0.01%	0.00E+00	0.00E+00
TOTAL	**4.40E-02**	**4.40%**	**1.36E-02**	**4.98E-02**

No substances included in the Candidate List of Substances of Very High Concern for authorization under REACH Regulations are present in Reynolux® pre-painted aluminum products, either above the threshold for registration with the European Chemicals Agency or above 0,1% (wt/wt).

LCA Information

Declared unit: 1 kg of Reynolux® pre-painted aluminum

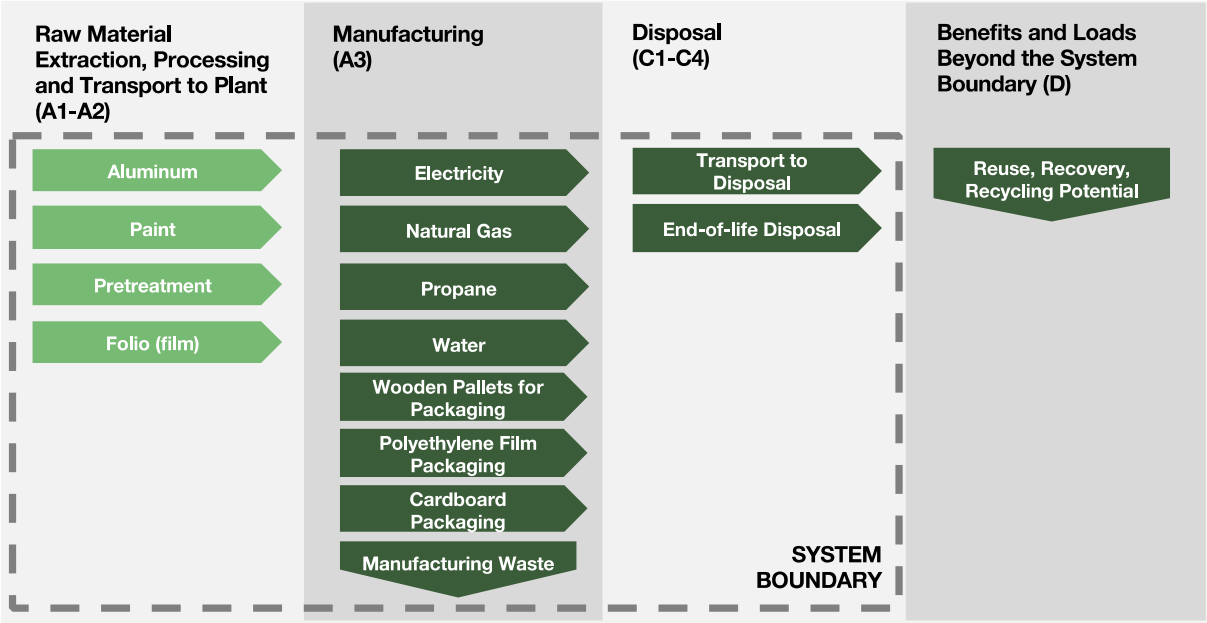
Reference service life: Not applicable

Time representativeness: Calendar year 2022

Database and LCA software used: Sphera MLC Database 2024.1 and LCA For Experts 10.8

Description of system boundary*: Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D)
Modules A4-A5 and B have been omitted from the system boundary as they are outside of the direct control of the product manufacturer/EPD owner.
Note that throughout all life cycle modules, production of capital goods, infrastructure, and personnel-related activities are excluded.
** Disclaimer: The use of the results of modules A1-A3 without considering the results of module C is discouraged.*

System diagram:



Electricity:
The electricity is sourced from the power grid, and no onsite electricity generation or contractual instrument (Guarantee of Origin or similar) is used. Sub-meter specific electricity values were not available from the manufacturing facility. Annual electricity consumption was normalized to the declared unit (one meter of Reynolux® pre-painted aluminum) using the allocation methodology described below.
Electricity for A3 uses the national residual grid mix for France with a reference year of 2022. A country-specific residual grid mix is the most granular data within the secondary datasets available and conforms to the requirements of the Construction Products PCR v1.3.4 (EPD® International, 2024).

The emissions associated with the French residual grid mix aggregated dataset as used in the LCA are 0.147 kg CO_2 eq per kWh using the GWP-GHG impact assessment methodology.

End-of-Life:
Product reuse at end-of-life is not considered as part of this study. The material is however fully recyclable. After its use, the Reynolux® aluminum is separated from the structure to be sent to an aluminum recycling site. No additional treatment of the products was expected to occur during deconstruction. The end-of-life scenarios for the product follow the typical disposal pathways for aluminum as defined by NF EN 15804+A2 (AFNOR, 2022). Under table L.7 of annex L, NF EN 15804+A2/CN recommends that the recovered aluminum ends up 96% in recycling with the remaining being sent to landfill (4%).

The recovery and reuse potential at end-of-life (Module D) of product and packaging waste takes the form of credits beyond the system boundaries. For pre-painted aluminum sheets and coils, these credits are calculated on the portion of aluminum not derived from recycled sources, in accordance with the methodology recommended by French national complement to EN 15804+A2 (CEN, 2019).

Assumptions:
Throughout this study, value choices and judgements that may have affected the LCA have been described. Additional decisions are summarized below:

- Packaging was assumed to be single use.
- In the absence of transportation distances from the paint, methylethylketone and folio suppliers, a distance of 1,000 km by diesel-powered truck was assumed as per the recommendations from the French national complement to EN 15804+A2 (AFNOR, 2022).
- Hazardous waste from the manufacturing stage was assumed to be transported 300 km to recovery or disposal via a diesel-powered truck as per the recommendations from the French national complement to EN 15804+A2 (AFNOR, 2022).
- Non-hazardous waste from the manufacturing stage as well as the EoL product were assumed to be transported 50 km to recovery or disposal via a diesel-powered truck as per the recommendations from the French national complement to EN 15804+A2 (AFNOR, 2022).
- Water used during manufacturing is mainly used for cleaning during production. In the absence of the total amount of wastewater generated at the site, it was assumed that no water was lost during the manufacturing stage.
- The selection of which MLC dataset to use to represent an aspect of a supply chain is a significant value choice. Collaboration between the LCA practitioner, the manufacturer, and MLC data experts was valuable in determining best-case scenarios in the selection of data. However, no generic data can be a perfect fit. Improved supply chain specific data would improve the accuracy of results, however budgetary and time constraints must be considered.
- Dismantling and disassembly of the Reynolux® pre-painted aluminum product from the building is assumed to be occurring with manual tools only.
- The end-of-life product is assumed to be processed in the same way as non-treated aluminum products as the amount of paint represents less than 3% of the product composition.

Cut-Off Rules:
Material inputs greater than 1% (based on total mass of the final product) were included within the scope of analysis. Material inputs less than 1% were included if sufficient data was available to warrant inclusion and/or the material input was thought to have significant environmental impact. No inputs or outputs were knowingly excluded from the scope of analysis.
Some material inputs may have been excluded within the Sphera MLC datasets used for this project. All MLC datasets have been critically reviewed and conform to the exclusion requirement of ISO 14040/44.

Allocation:

General principles of allocation were based on ISO 14040/44 and the requirements from EN 15804+A2 (CEN, 2019). Aluminum scrap is also generated at Merxheim alongside the Reynolux® aluminum products and is considered a co-product that can be used in subsequent product systems. As such an economic allocation approach was applied as recommended in the EN 15804+A2 co-product allocation guidelines from the French national complement (AFNOR, 2022). However, the economic value of that scrap is assumed to be $0. As such, this approach coincides with the ISO 21930 requirements for co-product allocation, that calls for a cut-off approach for this manufacturing output (ISO, 2017).

To derive a per-unit value for manufacturing inputs such as electricity, thermal energy, and water, allocation based on total production by mass was adopted. As a default, secondary Sphera MLC datasets use a physical mass basis for allocation.

Data Quality:

Overall, the data quality for this LCA is considered good. The geographic coverage, time coverage, and technological coverage are all good. The precision, consistency, and reproducibility are all high and the model is considered complete.

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

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	**A1**	**A2**	**A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Modules declared	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLO	RER	RER	-	-	-	-	-	-	-	-	-	RER	RER	RER	RER	GLO
Specific data used	< 10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

ND = Module not declared, GLO = Global

Post-Factory Gate Scenario Development

C1-C4 (Product End of Life) Scenario Per Declared Unit
Modeling of the product end-of-life was informed by guidance from the French national complement to EN 15804+A2 (AFNOR, 2022). Due to the absence of primary end-of-life data, the study relies on guidance from the NF EN 15804+A2/CN French national complement (AFNOR, 2022), in table L.7 of annex L, which recommends that the recovered aluminum ends up 96% in recycling with the remaining being sent to landfill (4%).

Distribution Details	Reynolux® Pre-painted Aluminum
Collected as mixed construction waste [kg]	1
Waste to landfill [kg]	0.04
Distance to landfill [km]	50
Waste to recycling [kg]	0.96
Distance to recycling [km]	50

Module D (Benefits and Loads Beyond the System Boundary) Scenario Per Declared Unit
Benefits and loads beyond the system boundary are accounted for in Module D and are to be declared according to the PCR. For pre-painted aluminum sheets and coils, these credits are calculated on the portion of aluminum not derived from recycled sources, in accordance with the methodology recommended by EN 15804+A2 (CEN, 2019). These credits are equal to the difference between the cradle-to-gate footprints of primary aluminum production and scrap recycling.

Impact Category Details

Impact Category	Acronym	Unit
Mandatory impact category indicators according to EN 15804+A2, as per EF 3.1, February 2023		
Global Warming Potential Total	GWP-total	kg CO_2 eq.
Global Warming Potential fossil fuels	GWP-fossil	kg CO_2 eq.
Global Warming Potential biogenic	GWP-biogenic	kg CO_2 eq.
Global Warming Potential land use and land use change;	GWP-luluc	kg CO_2 eq.
Depletion potential of the stratospheric ozone layer	ODP	kg CFC 11 eq.
Acidification potential, Accumulated Exceedance	AP	mol H^+ eq.
Eutrophication potential, fraction of nutrients reaching freshwater end compartment	EP-freshwater	kg P eq.
Eutrophication potential, fraction of nutrients reaching marine end compartment;	EP-marine	kg N eq.
Eutrophication potential, Accumulated Exceedance	EP-terrestrial	mol N eq.
Formation potential of tropospheric ozone	POCP	kg NMVOC eq.
Abiotic depletion potential for non-fossil resources*	ADP- min.&metals	kg Sb eq.
Abiotic depletion for fossil resources potential*	ADP-fossil	MJ
Water (user) deprivation potential, deprivation-weighted water consumption*	WDP	m^3
PCR 2019:14 GWP-GHG		
Global warming potential – greenhouse gasses	GWP-GHG	kg CO_2 eq.
TRACI 2.1		
Acidification potential of soil and water	AP	kg SO_2 eq.
Eutrophication potential	EP	kg N eq.
Global warming potential (100 years, excludes biogenic CO_2)**	GWP excluding biogenic C	kg CO_2 eq.
Global warming potential (100 years, includes biogenic CO_2)	GWP including biogenic C	kg CO_2 eq.
Ozone depletion of air	ODP	kg CFC-11 eq.
Abiotic depletion of fossil fuel resources	ADP-fossil	MJ, surplus energy
Smog formation potential	SFP	kg O_3 eq.
Biogenic Carbon Indicators		
Biogenic Carbon Removal from Product	BCRP	kg CO_2 eq.
Biogenic Carbon Emission from Product	BCEP	kg CO_2 eq.
Biogenic Carbon Removal from Packaging	BCRK	kg CO_2 eq.
Biogenic Carbon Emission from Packaging	BCEK	kg CO_2 eq.
Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes	BCEW	kg CO_2 eq.
Calcination Carbon Emissions	CCE	kg CO_2 eq.
Carbonation Carbon Removals	CCR	kg CO_2 eq.
Carbon Emissions from Combustion of Waste from Non- Renewable Sources used in Production Processes	CWNR	kg CO_2 eq.
Resource Use Indicators		
Use of renewable primary energy***	RPR_E	MJ LHV
Use of renewable primary energy as materials***	RPR_M	MJ LHV
Total use of renewable primary energy resources***	RPR_T	MJ LHV
Use of non-renewable primary energy***	$NRPR_E$	MJ LHV
Use of non-renewable primary energy as materials***	$NRPR_M$	MJ LHV
Total use of non-renewable primary energy resources***	$NRPR_T$	MJ LHV
Secondary materials	SM	kg

Impact Category	Acronym	Unit
Renewable secondary fuels	RSF	MJ
Non-renewable secondary fuels	NRSF	MJ
Recovered energy	RE	MJ
Net use of fresh water	FW	m^3
Waste and Output Flow Indicators		
Hazardous waste disposed	HWD	kg
Non-hazardous waste disposed	NHWD	kg
Radioactive Waste deposited	RWD	kg
High-level radioactive waste	HLRW	kg
Intermediate- and low-level radioactive waste, conditioned, to final repository	ILLRW	kg
Components for reuse	CRU	kg
Materials for recycling	MFR	kg
Materials for energy recovery	MER	kg
Exported Electrical Energy	EEE	MJ
Exported Thermal Energy	EET	MJ

** Disclaimer: The results of these environmental impact indicators shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*
*** GWP excluding biogenic C (Global Warming Potential Excluding Biogenic Carbon) is the IPCC AR6 GWP 100 value.*
**** As described in Annex 3 of the PCR version 1.3.4, primary energy is accounted for using Option B, where energy content that is wasted (e.g. in landfill or in incineration), remains as part of the indicator for energy used for raw materials, and shall not be reported as an input of energy used for energy carriers. As such, the primary energy indicators do not balance to zero across the life cycle.*
***** 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.*

Environmental Performance

Mandatory impact category indicators according to EN 15804 reference packaged, based on EF 3.1

Results per declared unit																
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	6.78E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	5.25E-03	0.00E+00	5.99E-04	-4.73E+00
GWP-biogenic	kg CO_2 eq.	9.61E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	8.22E-06	0.00E+00	1.73E-06	0.00E+00
GWP-luluc	kg CO_2 eq.	2.21E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	5.00E-05	0.00E+00	3.59E-06	-8.33E-04
GWP-total	kg CO_2 eq.	6.80E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	5.31E-03	0.00E+00	6.04E-04	-4.73E+00
ODP	kg CFC 11 eq.	3.95E-11	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	7.16E-16	0.00E+00	1.61E-15	-3.24E-11
AP	mol H^+ eq.	3.42E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	3.54E-05	0.00E+00	4.25E-06	-2.76E-02
EP-freshwater	kg P eq.	5.07E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	3.53E-08	0.00E+00	1.36E-09	-2.03E-06
EP-marine	kg N eq.	6.03E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.70E-05	0.00E+00	1.09E-06	-4.14E-03
EP-terrestrial	mol N eq.	6.59E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.90E-04	0.00E+00	1.21E-05	-4.52E-02
POCP	kg NMVOC eq.	1.75E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	3.31E-05	0.00E+00	3.35E-06	-1.24E-02
ADP-minerals&metals*	kg Sb eq.	1.16E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	4.45E-10	0.00E+00	3.88E-11	-9.95E-07
ADP-fossil*	MJ	9.26E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	6.93E-02	0.00E+00	7.89E-03	-5.85E+01
WDP*	m^3	7.62E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	7.36E-05	0.00E+00	6.85E-05	-6.51E-01
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption															

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

NOTE: The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

Additional mandatory and voluntary impact category indicators

Results per declared unit															
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO_2 eq.	6.80E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	5.31E-03	0.00E+00	6.04E-04	-4.73E+00
PM	Disease incidence	4.78E-07	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.52E-10	0.00E+00	5.33E-11	-3.89E-07
IRP	kBq U235 eq	9.57E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	6.04E-05	0.00E+00	9.57E-06	-6.16E-01
ETP	CTUe	2.02E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	5.41E-02	0.00E+00	4.55E-03	-1.41E+01
HTP-c	CTUh	1.97E-09	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.16E-12	0.00E+00	1.07E-13	-1.35E-09
HTP-nc	CTUh	3.86E-08	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	6.28E-11	0.00E+00	4.15E-12	-2.90E-08
SQP	Pt	1.83E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	4.65E-02	0.00E+00	2.17E-03	-1.64E+00
Acronyms	GWP-GHG = Global warming potential, GHG; PM = Particulate matter; IRP = Ionizing radiation, human health; ETP = Ecotoxicity, freshwater; HTP-c= Human toxicity, cancer; HTP-nc = Human toxicity, non-cancer; SQP = Land use.															

Resource use indicators

Results per declared unit															
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2.84E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	5.57E-03	0.00E+00	1.38E-03	-2.41E+01
PERM[2]	MJ	5.51E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	2.90E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	5.57E-03	0.00E+00	1.38E-03	-2.41E+01

[1] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero.
[2] The estimation of the primary energy indicators follows option B (incineration without energy recovery) as per PCR 2019:014 v1.3.4 Annex 3.

PENRE	MJ	9.23E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	6.93E-02	0.00E+00	7.89E-03	-5.86E+01
PENRM[3]	MJ	3.03E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	9.26E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	6.93E-02	0.00E+00	7.89E-03	-5.86E+01
SM	kg	4.33E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	6.56E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	8.44E-06	0.00E+00	2.09E-06	-6.12E-02
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water															

Waste indicators

Results per declared unit															
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	5.15E-08	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.72E-12	0.00E+00	1.97E-12	-3.94E-08
Non-hazardous waste disposed	kg	1.79E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.35E-05	0.00E+00	4.00E-02	-1.43E+00

[3] The estimation of the primary energy indicators follows option B (incineration without energy recovery) as per PCR 2019:014 v1.3.4 Annex 3.

Radioactive waste disposed	kg	4.84E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.68E-07	0.00E+00	8.28E-08	-3.21E-03

Output flow indicators

Results per declared unit																
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	4.77E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	9.60E-01	0.00E+00
Materials for energy recovery	kg	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, gas and process	MJ	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Mandatory impact category indicators according to ISO 21930

Results per declared unit															
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-excluding biogenic C	kg CO_2 eq.	6.79E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	5.26E-03	0.00E+00	6.00E-04	-4.73E+00
GWP-including biogenic C	kg CO_2 eq.	6.79E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	5.26E-03	0.00E+00	6.00E-04	-4.74E+00
AP	kg SO_2 eq.	2.90E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	3.26E-05	0.00E+00	3.70E-06	-2.31E-02
EP	kg N eq.	9.18E-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.84E-06	0.00E+00	1.64E-07	-6.01E-04
ODP	kg CFC11 eq.	6.67E-11	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.44E-17	0.00E+00	3.21E-17	-6.31E-11
ADP-fossil	MJ	7.99E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	6.85E-02	0.00E+00	7.66E-03	-5.04E+01
SFP	kg O_3 eq	3.76E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	7.36E-04	0.00E+00	6.92E-05	-2.63E-01
Acronyms	GWP- excluding biogenic C = Global Warming Potential excluding biogenic carbon; GWP-biogenic = Global Warming Potential including biogenic carbon; AP = Acidification potential; EP = Eutrophication potential; ODP = Ozone depletion potential; ADP-fossil = Abiotic depletion for fossil resources potential; SFP = Smog formation potential.															

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

Resource use indicators

Results per declared unit																
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2.84E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	5.57E-03	0.00E+00	1.38E-03	-2.41E+01
PERM	MJ	5.51E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	2.90E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	5.57E-03	0.00E+00	1.38E-03	-2.41E+01
PENRE	MJ	9.23E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	6.93E-02	0.00E+00	7.89E-03	-5.86E+01
PENRM	MJ	3.03E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PENRT	MJ	9.26E+01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	6.93E-02	0.00E+00	7.89E-03	-5.86E+01
SM	kg	4.33E-01	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RE	MJ	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW	m^3	6.56E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	8.44E-06	0.00E+00	2.09E-06	-6.12E-02
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; RE = Recovered energy; FW = Use of net fresh water															

Waste indicators

Results per declared unit															
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	5.15E-08	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.72E-12	0.00E+00	1.97E-12	-3.94E-08
Non-hazardous waste disposed	kg	1.79E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.35E-05	0.00E+00	4.00E-02	-1.43E+00
High-level radioactive waste, conditioned	kg	6.33E-06	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.37E-01	0.00E+00	8.42E-11	-5.22E-06
Intermediate and low-level radioactive waste, conditioned	kg	4.83E-03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.68E-07	0.00E+00	8.27E-08	-3.20E-03

Output flow indicators

Results per declared unit															
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	4.77E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	9.60E-01	0.00E+00

Materials for energy recovery	kg	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, gaz and process	MJ	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Carbon emissions and removals

Results per declared unit															
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
BCRP	kg CO_2	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEP	kg CO_2	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCRK	kg CO_2	4.23E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEK	kg CO_2	4.23E-02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEW	kg CO_2	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCE	kg CO_2	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCR	kg CO_2	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNR	kg CO_2	0.00E+00	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acronyms	BCRP = Biogenic carbon removal from product; BCEP = Biogenic carbon emission from product; BCRK = Biogenic carbon removal from packaging; BCEK = Biogenic carbon emission from packaging; BCEW = Biogenic carbon emission from combustion of waste from renewable sources; CCE = Calcination carbon emissions; CCR = Carbonation carbon removals; CWNR = Carbon emissions from combustion of waste from non-renewable sources.														

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Abbreviations

AAPM	Arconic Architectural Products SAS
ASI	Aluminium Stewardship Initiative
EPD	Environmental Product Declaration
EoL	End-of-Life
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
MLC	Managed Lifecycle Content
ND	(Module) Not Declared
PCR	Product Category Rules
RER	Region Europe
RME	Region Middle East

Additional environmental information

Scenario and sensitivity analysis were performed within the life cycle assessment to determine how the GWP results for this product are affected by changes made through aluminum sourcing. The aim of these analysis was to study two of the three main pathways for reducing emissions in aluminum products in order to align with major climate goals: electricity decarbonization, through the use of clean power sources to produce low-carbon aluminum, and the use of recycled metal.

Low-Carbon Aluminum Scenarios

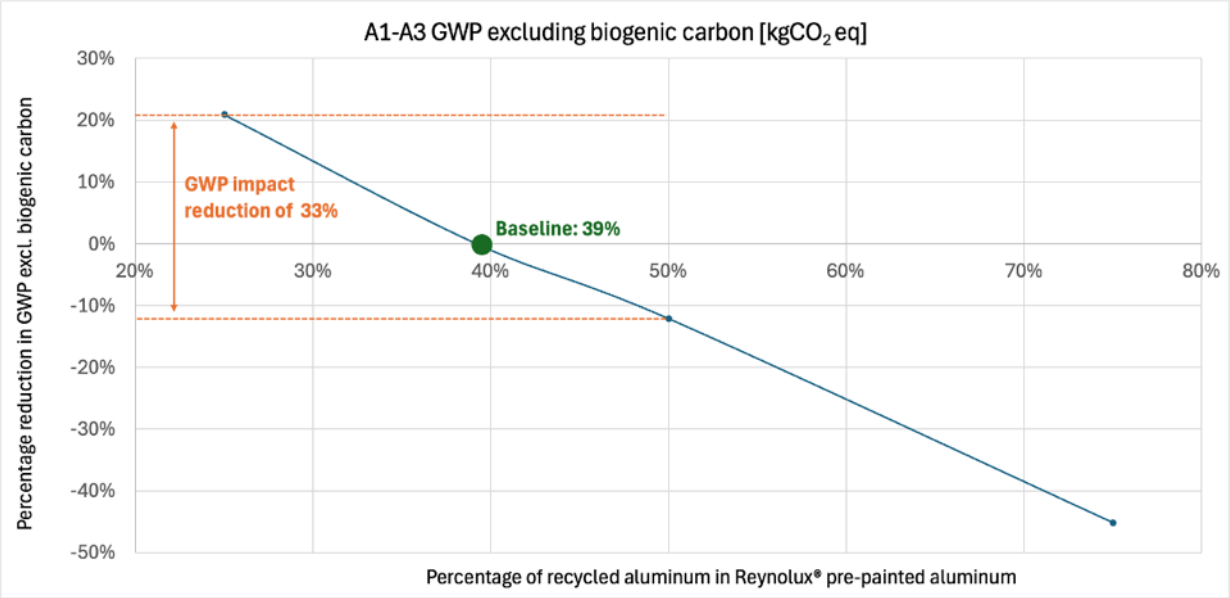
The aluminum coil supply used currently is compared to two low-carbon footprint options that are available in the current aluminum market according to the Aluminum Stewardship Initiative (ASI) (Aluminium Stewardship Initiative, 2022) as seen in the below table.

Sourcing Scenarios	A1-A3 GWP (kg CO_2 eq/kg)	Difference with Baseline (%)
Baseline – AAPM Production (A1-A3)	6.80E+00	N/A
Baseline – AAPM Aluminum (A1 only)	6.60E+00	N/A
Low-Carbon Footprint Option 1 (4 kg CO_2 eq)	4.74E+00	-29%
Low-Carbon Footprint Option 2 (2 kg CO_2 eq)	2.70E+00	-59%

The GWP impacts associated with the Reynolux® manufacturing stage (A1-A3) would lower by almost 2 kg CO_2 eq or 28% if the aluminum coil inputs had a carbon footprint of 4 kgCO_2 eq. If AAPM were to use aluminum coils with an embedded carbon footprint of 2 kg CO_2 eq, the manufacturing-related impacts would reduce by almost 4 kg CO_2 eq or 59%.

Recycled Aluminum Sensitivity Analysis

Another way to reduce the overall global warming potential impacts associated with Reynolux® is to reduce the use of primary aluminum and increase the use of recycled metal. A sensitivity analysis was conducted to examine the effect of increasing recycled aluminum content in the products.



As shown in the figure above, a 25% increase in recycled aluminum content leads to a reduction of more than 2 kg CO_2 eq or 29% in GWP.

Additional social and economic information

No additional social and economic information is declared.

Information related to Sector EPD

This is an individual EPD®.

Differences versus previous versions

This is the first version of the EPD®.