

Environmental Product Declaration

In accordance with ISO 14025:2006 for:

Green Billet

from

Arslan Alüminyum A.Ş.



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 **EPD**
INTERNATIONAL EPD SYSTEM

 **EPD**
TÜRKİYE
INTERNATIONAL EPD SYSTEM

Programme:

The International EPD System, www.environdec.com

Programme operator:

EPD International AB

Type of EPD:

EPD of a single product from a manufacturer/service provider

EPD registration number:

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Version date:

2025-10-30

Validity date:

2030-10-29

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
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Product Category Rules (PCR)
Product Category Rules (PCR): Basic Aluminium Products and Special Alloys, 2022:08, version: 1.0.1, Date: 2025-03-05, UN CPC code: 4153
PCR review was conducted by: <i>The Technical Committee of the International EPD® System.</i> <i>Review chair: Hüdai Kara</i>
Life Cycle Assessment (LCA)
LCA Accountability: Ceren Naz Güleçyüz

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: Callum Hill, JCH Industrial Ecology Ltd 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 ISO 14025.

INFORMATION ABOUT EPD OWNER

Owner of the EPD: Arslan Alüminyum A.Ş.

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Description of the organisation: Arslan Alüminyum focuses on the production of green billets manufactured through advanced recycling and remelting processes. The company specializes in delivering high-quality billets for extrusion applications, prioritizing sustainable production methods and operating in accordance with circular economy principles.

About Arslan Alüminyum

Arslan Aluminium was established in 1970 by Mehmet Arslan and operates in the field of aluminium production and processing. The company has an annual extrusion profile production capacity of 90,000 tons and conducts activities in surface treatment, die manufacturing, anodizing, powder coating, wood effect coating, and mechanical processing in accordance with international quality standards.

Arslan Aluminium operates a casting plant with a capacity of 240,000 tons per year and a recycling facility with a capacity of 120,000 tons per year, enabling the production of aluminium billets and ingots. The company has four production facilities located in the 1st and 2nd Organized Industrial Zones of Bilecik, Türkiye. The 1st Plant, located in the 1st Organized Industrial Zone, includes extrusion profile production and anodizing operations. The 3rd Plant, located in the 2nd Organized Industrial Zone, includes the Recycling Facility and Casting Plant. The 2nd and 4th Plants, also located in the 2nd Organized Industrial Zone, are engaged in extrusion profile production. The 2nd Plant additionally includes the powder coating and wood effect unit, die workshop, design department, and mechanical processing unit.

The head office of Arslan Aluminium is located in Kağıthane, İstanbul, where customs operations and financial affairs are managed.



Figure 1. Arslan Alüminyum General View

Product-related or management system-related certifications: This product complies with EN 573-3 – Chemical composition standard and EN 755-2 – Mechanical properties standard. Additionally, it holds ISO 9001 – Quality Management System, ISO 14001 – Environmental Management System, ISO 45001 – Occupational Health and Safety, ISO 50001 – Energy Management System, and REACH & RoHS – Chemical compliance and environmental legislation certificates.

PRODUCT INFORMATION

Product name: Green Billet

Product identification: The Green Billet is a semi-finished product used as the primary raw material in aluminium extrusion processes.



Figure 2. Visual Representation of the Product

UN CPC code: 4153

Product description: The Green Billet is a semi-finished product used as the primary raw material in aluminium extrusion processes. It is produced through controlled melting and casting operations, followed by a homogenization heat treatment to ensure structural uniformity and suitable mechanical properties for extrusion. The product is manufactured from 6xxx series aluminium alloys (e.g., 6063, 6060, 6005, 6082) and complies with EN 573-3 and EN 755-2 standards. Green Billets have diameters ranging from 90 mm to 305 mm and lengths between 500 mm and 8000 mm. The material has a density of approximately 2.70 g/cm³ and a melting range of around 650°C, depending on the alloy composition.

Name and location of production site(s): Türkiye

CONTENT DECLARATION

- The mass (weight) of one unit of a product, as purchased or per declared unit: The declared unit is 1 kg of green billet.
- Information about the content of the product in the form of a list of materials and substances, and their mass, shall be declared: The declared content is 82% of scrap from recycling aluminium, 16% of primary aluminium and 2% of primary alloys.

The declared share of biogenic/recycled materials: Provenience of recycled materials in the product: Aluminium scrap: 0.82 kg per 1 kg of the secondary aluminium product.

Product content	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/product or declared unit
Aluminium	0.98	0.82	-	-
Alloys	0.2	-	-	-
TOTAL	1	0.82	-	-

Packaging materials	Mass, kg	Mass-% (versus the product)	Biogenic material, kg C/product or declared unit
Wooden block	0.00856	0.00856	0.003809
Steel hoop	0.00010	0.00010	-
TOTAL	0.00866	0.00866	0.003809

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

LCA INFORMATION

Declared unit: 1 kg of Green Billet

Time representativeness: LCA study was conducted in 2025, taking into consideration production data for the calendar year 2024.

Geographical scope: Türkiye

Database(s) and LCA software used: Ecoinvent 3.10 database and SimaPro software 9.6.0.1

Description of system boundaries: The system boundary is cradle to gate. Since basic aluminium is a semi-finished product that undergoes further processing to become a final consumer good. Its final application and end-of-life scenario cannot be defined at this stage, as it may be integrated into various products across different sectors. Therefore, the assessment is limited to the environmental impacts up to the factory gate, excluding use and end-of-life phases.

Excluded lifecycle stages: Downstream processes (from gate to grave)

Cut-off Criteria: The cut-off criteria applied in this study allow the exclusion of individual input flows contributing less than 1% to the total, provided that their cumulative share does not exceed 5%. Accordingly, the LCA model excludes data related to employee commuting, infrastructure and capital goods manufacturing (such as machinery), machinery maintenance, and production-related waste generation. These exclusions are considered acceptable since their contribution to the overall environmental impact is negligible.

Allocations: Energy consumption was allocated according to 2024 production figures. There is no coproduct allocation.

Upstream Module: The upstream processes considered in this study include the extraction and production of raw and basic materials. This encompasses all associated activities, including mining, transportation, and the use of electricity, heat, steam, and fuel. Also, environmental impacts due to transportation of the raw materials considered in this module.

Core Module: The core processes in this study include manufacturing, product packaging, and end-of-life treatment of production waste. The Green Billet manufacturing process begins with melting recycled and/or primary aluminium scrap, followed by the addition of alloying elements to achieve the required composition. The molten metal is cast into billets using continuous or semi-continuous methods, then homogenized to ensure uniform structure and suitable properties for extrusion. After controlled cooling, billets are inspected for quality and prepared for delivery.

Details of electricity data used in LCA model:

Country: Türkiye

Source Type: 100% Grid

Energy Sources: Coal: 62.7%

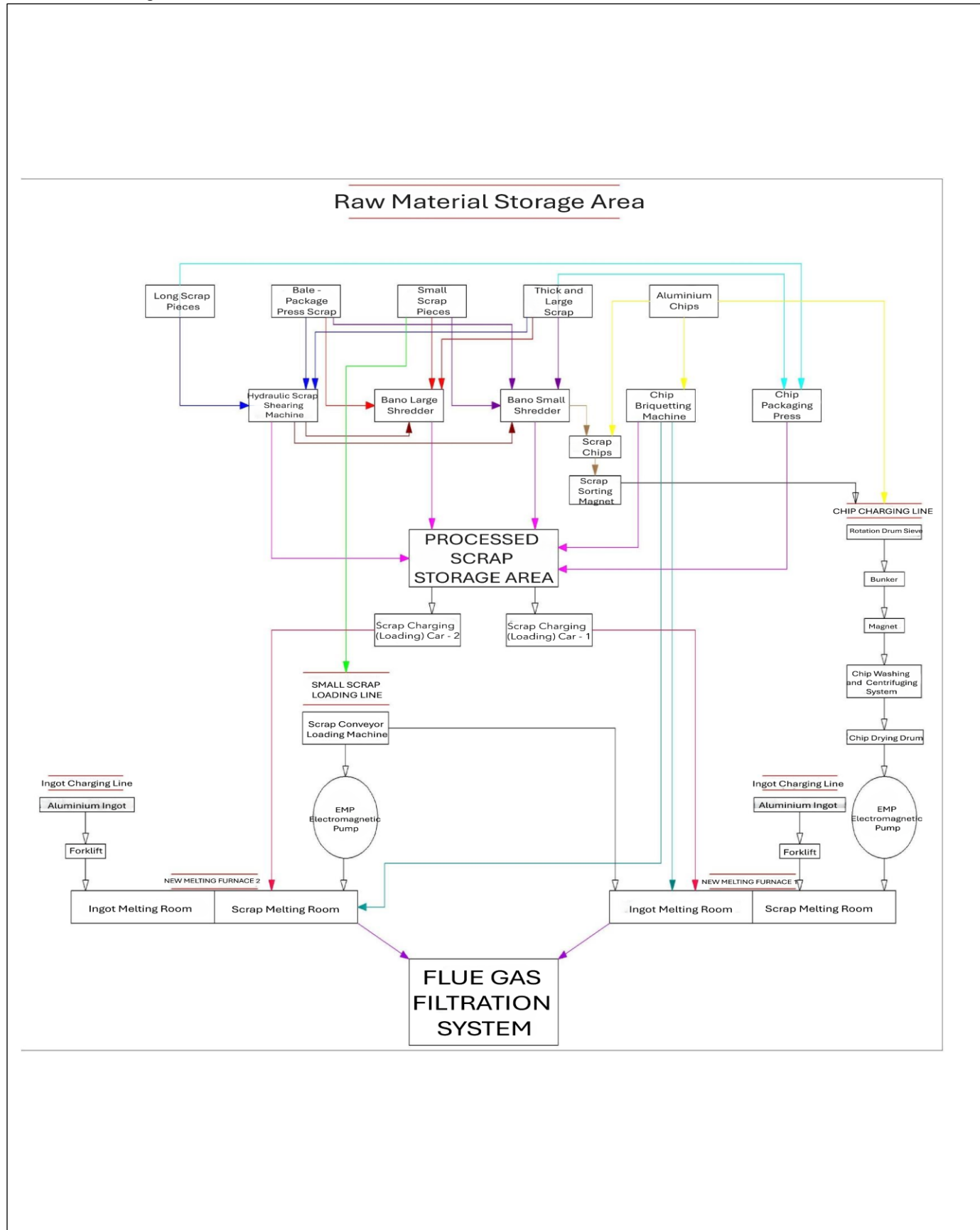
Oil: 0.7%

Natural gas: 36.6%

Electricity Data: Residual mix is calculated from "Electricity, medium voltage {TR}| market for electricity, medium voltage | Cut-off, S" by excluding renewable energy generation

Electricity Emission Factor (GWP-GHG result): 0.904 kg CO₂eq/kWh

Process flow diagram:



ENVIRONMENTAL PERFORMANCE

Impact category indicators

PARAMETER		UNIT	Upstream	Core	TOTAL
Global warming potential (GWP)	Fossil	kg CO ₂ eq.	2.16E+00	8.24E-02	2.25E+00
	Biogenic	kg CO ₂ eq.	6.49E-03	-8.25E-03	-1.76E-03
	Land use and land transformation	kg CO ₂ eq.	2.90E-02	1.05E-05	2.90E-02
	TOTAL	kg CO ₂ eq.	2.20E+00	7.41E-02	2.27E+00
Ozone layer depletion (ODP)		kg CFC 11 eq.	3.57E-08	4.76E-10	3.62E-08
Acidification potential (AP)		mol H ⁺ eq.	1.44E-02	5.37E-04	1.49E-02
Eutrophication potential (EP)	Aquatic freshwater	kg P eq.	8.07E-04	8.25E-05	8.90E-04
	Aquatic marine	kg N eq.	2.22E-03	9.62E-05	2.31E-03
	Aquatic terrestrial	mol N eq.	2.26E-02	8.82E-04	2.35E-02
Photochemical oxidant creation potential (POCP)		kg NMVOC eq.	8.35E-03	2.66E-04	8.61E-03
Abiotic depletion potential (ADP)*	Metals and minerals	kg Sb eq.	3.50E-06	2.37E-08	3.53E-06
	Fossil resources	MJ, net calorific value	2.68E+01	9.52E-01	2.77E+01
Water deprivation potential (WDP)*		m ³ world eq. deprived	4.52E-01	4.20E-02	4.94E-01

* 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

PARAMETER		UNIT	Upstream	Core	TOTAL
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	7.52E+00	1.72E-01	7.69E+00
	Used as raw materials	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00
	TOTAL	MJ, net calorific value	7.52E+00	1.72E-01	7.69E+00
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	2.68E+01	9.52E-01	2.77E+01
	Used as raw materials	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00
	TOTAL	MJ, net calorific value	2.68E+01	9.52E-01	2.77E+01

Waste indicators (optional)

PARAMETER	UNIT	Upstream	Core	TOTAL
Hazardous waste disposed	kg	1.20E-04	1.90E-06	1.21E-04
Non-hazardous waste disposed	kg	2.05E-01	1.72E-03	2.07E-01
Radioactive waste disposed	kg	0.00E+00	0.00E+00	0.00E+00

Output flow indicators (optional)

PARAMETER	UNIT	Upstream	Core	TOTAL
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ per energy carrier	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ per energy carrier	0.00E+00	0.00E+00	0.00E+00

ABBREVIATIONS

Abbreviation	Definition
General Abbreviations	
EN	European Norm (Standard)
GPI	General Programme Instructions
ISO	International Organization for Standardization
CPC	Central product classification
GRI	Global Reporting Initiative

REFERENCES

General Programme Instructions of the International EPD® System. Version 5.0.

PCR 2022:08. Basic Aluminium Products and Special Alloys. Version 1.0.1.

Ecoinvent / Ecoinvent Centre, www.ecoinvent.org

SimaPro / SimaPro LCA Software, Pré Consultants, the Netherlands, www.pre-sustainability.com

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