

# ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025:2006 for:

*3xxx Series Aluminium Foil*

from

**Assan Alüminyum**



## PROGRAMME

The International EPD® System, [www.environdec.com](http://www.environdec.com)  
EPD® Turkey, [www.epdturkey.org](http://www.epdturkey.org)

## PROGRAMME OPERATOR

EPD® International AB & EPD Turkey

## EPD REGISTRATION NUMBER

EPD-IES-0017786

## VALID UNTIL

2029-11-30

## PUBLICATION DATE

2024-11-30

## REVISION DATE

2025-02-26

# Programme Information

## Programme Information

**Programme:** The International EPD® System

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## Information about verification and reference PCR:

### Product category rules (PCR)

*Basic Aluminium Products and Special Alloys Product Category Classification, 2022:08, version 1.0*

*UN CPC 4153*

### PCR review was conducted by

*The Technical Committee of the International EPD® System. See [www.environdec.com/TC](http://www.environdec.com/TC) for a list of members. Review chair: Hüdai Kara. The review panel may be contacted via the Secretariat [www.environdec.com/contact](http://www.environdec.com/contact).*

Independent verification of the declaration and data, according to ISO 14025:2006:

EPD process verification

EPD verification

### Third party verifier

SimaPro partners for India & Sri Lanka, SIPL Pvt Ltdy

### Approved by

The International EPD® System Technical Committee, supported by the Secretariat

Procedure for follow-up of data during EPD validity involves third party verifier:

Yes

No

## LCA Study & EPD Design Conducted by

Semtrio Sustainability Consulting

BUDOTEK Teknopark, No 8/27

Umraniye / Istanbul Turkey

[www.semtrio.com](http://www.semtrio.com)



## Assan Alüminyum has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes 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 characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see ISO 14025.

**Disclaimer:** Additional deviations within the EPDs may exist that have not been identified by the Secretariat of the EPD International AB. The responsibility for verifying EPDs lies with independent third-party verifiers, EPD International AB is not accountable for detecting each potential deviation that passes through the EPD verification process.

# Company Information

## Owner of the EPD

### Assan Alüminyum Sanayi ve Ticaret A.Ş.

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Assan Alüminyum, one of the world's leading manufacturers in the flat-rolled aluminium (FRP) industry, producing coil & sheet, foil and pre-painted aluminium products since 1988, offering its products to a variety of sectors such as packaging, distribution, construction, consumer durables, automotive and HVAC. Assan Alüminyum, a subsidiary of Kibar Holding, has an installed annual capacity of 360 thousand tons in its production facilities, with the highest continuous casting capacity in all of Europe and Americas. The company is currently one of the 2 largest aluminium foil manufacturers in Europe, with an aluminium foil production capacity of 130 thousand tons.

Assan Alüminyum Creates the Future Together with its business partners. With its core values of reliability, flexibility, innovation and sustainability, the company provides customized solutions for its customers. Assan Alüminyum's vision is based on creating long-lasting value by being more sustainable, in environmental, governance and social terms. Assan Alüminyum received the Aluminium Stewardship Initiative (ASI) Performance Standard Certificate for all of facilities. ASI framework is essential for the company to manage all of its business processes according to global sustainability standards. With the clean energy that the company produces at its Manavgat Renewable Energy Power Plant, it generates and procures I-RECs (International Renewable Energy Certificate) that allow it to fully offset its market-based Scope 2 emissions. The 100% and infinitely recyclable aluminium is recycled at its integrated recycling facility, which helps reduce the carbon footprint of the company.

Assan Alüminyum, a global pioneer in the continuous casting technology, creates value by developing innovative, tailor-made solutions for its business partners at its officially registered R&D Center.

With its global culture, 1700 dedicated employees, Assan Alüminyum exports to more than 70 countries around the world, particularly to West Europe and North America. Kibar Americas, the wholly-owned North American subsidiary of Assan Alüminyum in Chicago, aims to perform the ambitious plans for growth in North America.



## NAME AND LOCATION OF PRODUCTION SITES

### Tuzla Plant

Yayla Mahallesi Rüya Sokak No:2 34940  
Tuzla – İstanbul/Turkey

### Dilovası Plant

Dilovası Organize Sanayi Bölgesi 1. Kısım Dicle  
sok. No 40 41455 / Kocaeli/Turkey

# Product Information

Product Name:

## 3xxx Series Aluminium Foil

Flat rolled aluminium is produced by casting aluminium through the melting of aluminium ingots / t-bars. The cast coils are then rolled down to the desired thickness in cold rolling mills. Aluminium foil is produced by rolling mill-finished coils in foil rolling mills down to thicknesses of 0.2 mm or thinner gauges. Aside from foil rolling, the foil production process may also include the annealing, separating, slitting and packaging processes

Flat rolled aluminium below the thickness of 0.2mm is called aluminium foil. 3xxx series alloys contain manganese as the main alloying element.

### Intended Use of Product

3xxx Series aluminium foil has superior qualities, such as lightness, impermeability, high-conductivity, high corrosion resistance and infinite recyclability, which make it the product of choice for various different applications and industries. 3xxx Series aluminium foil is primarily used in automotive heat exchanger applications.

## Technical Specifications

| Technical specification                                                             | Test Method   | Unit                       | Value     |
|-------------------------------------------------------------------------------------|---------------|----------------------------|-----------|
| Density                                                                             | NA            | (kg/m <sup>3</sup> ) x 103 | 2.73      |
| Melting point (Typical)                                                             | NA            | °C                         | -         |
| Electrical conductivity (Typical) at 20°C/<br>at 68 °F                              | EN 14121:2009 | MS/m (0.58*%IACS)          | 22 – 30   |
| Thermal conductivity (Typical) at 25°C/<br>at 77 °F                                 | NA            | W/(m.K)                    | 160 – 220 |
| Average Coefficient of thermal expansion<br>(Typical) 20°C to 100°C /68°F to 212 °F | NA            | µm/m.°C                    | 22 – 25   |
| Modulus of elasticity (Typical)                                                     | NA            | GPa                        | 69 – 70   |
| Hardness (typical)                                                                  | NA            | HB                         | -         |
| Yield strength (min)                                                                | EN 485-2      | MPa                        | 120       |
| Ultimate tensile strength (min)                                                     | EN 485-2      | MPa                        | 155       |
| Breaking elongation (min) (50 mm&4D)                                                | EN 485-2      | %                          | 3         |
| Chemical composition                                                                | EN 485-2      | % by mass                  | 96        |

UN CPC code: 41535 Foil, of aluminium, of a thickness not exceeding 0.2 mm

# LCA Information

## Declared Unit

1 kg of 3xxx Series Aluminium Foil ready to delivery at the factory gate.

## Reference Service Life

Not applicable.

## Time Representativeness

The production data in this LCA study represents the period of 1 January - 31 December 2023.

## Database(s) and LCA software used

SimaPro LCA v9.6.0.1 software with Ecoinvent v3.9.1

## Description of System Boundaries

Cradle to gate with, upstream processes and core processes according to PCR section 4.3.

## Data Quality and Data Collection

Specific data was used for module Core Processes (Processes the manufacturer has influence over) and was gathered from the Assan Alüminyum Tuzla and Dilovası Manufacturing Plant. Specific data includes actual product weights, amounts of raw materials used, product content, energy consumption, transport figures, water consumption and amounts of wastes. For Upstream and Core Processes modules, according to ISO 14044, generic data was applied and was obtained from Ecoinvent v3.9.1.

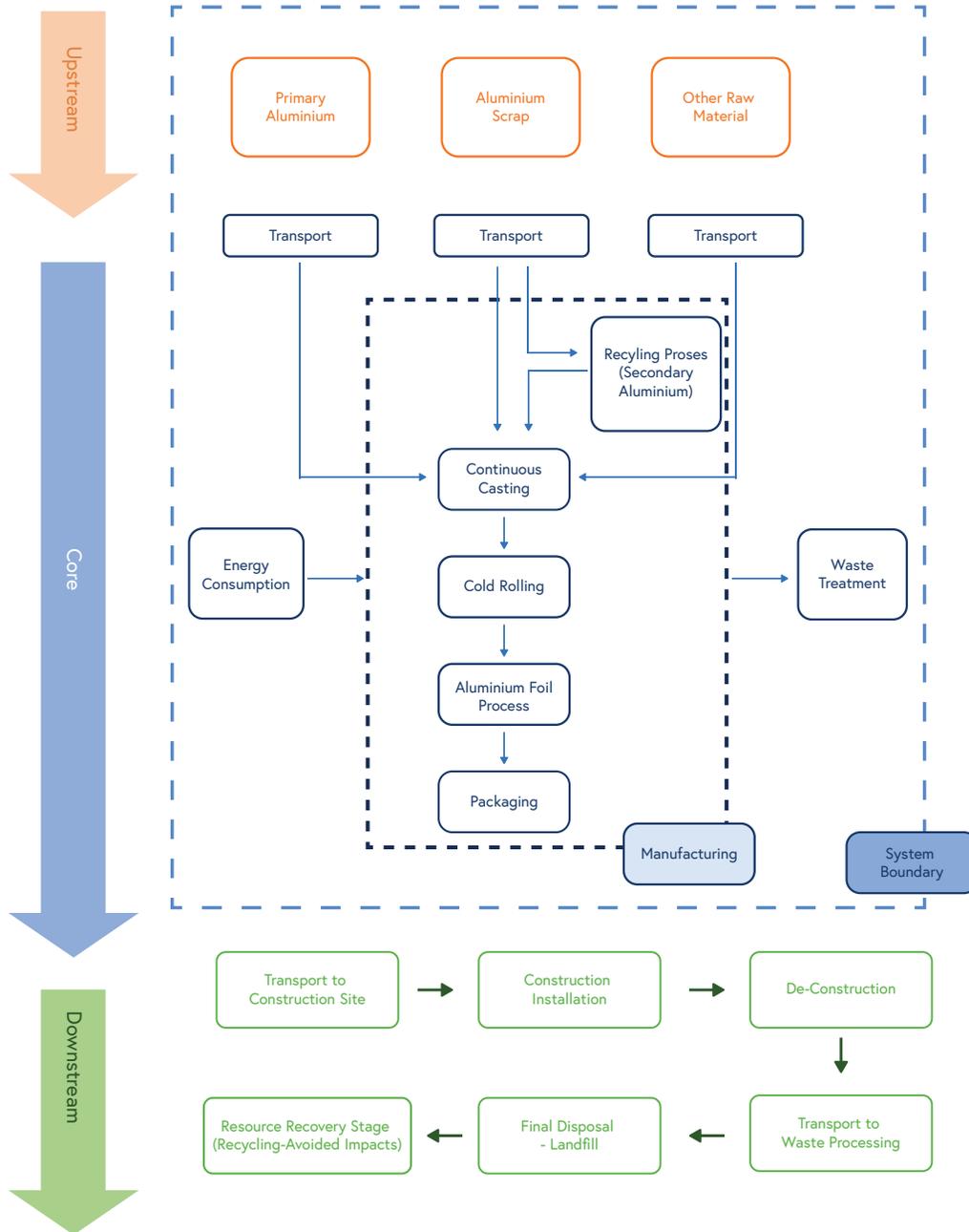
## Allocation

Allocation was avoided by dividing the unit process into two or more sub-processes and collecting the environmental data related to these sub-processes.

## Cut-off Rules

Life Cycle Inventory data for a minimum of 99% of total inflows to the three life cycle stages have been included and a cut-off rule of 1% regarding energy, mass, and environmental relevance was applied.

# System Diagram



# Description of Declared Modules

## Upstream

The upstream module covers the extraction and procurement of raw materials used for the product. At this stage, only activities related to the production of raw materials are evaluated. The raw materials used include primary aluminium, aluminium scrap (post consumer and pre-consumer) and other raw materials. This process represents the start of the product's life cycle, where the first environmental impacts occur.

## Core

The core module covers the transportation of raw materials, processing, production processes, energy use, process emissions, waste management, and product packaging. This stage is the critical process where the environmental impacts of production and other facility activities are evaluated. Production processes such as recycling, continuous casting, cold rolling in our production line are included in this stage. In addition, electricity, transportation processes, natural gas consumption, and packaging materials used in the core stage are also considered.

## Downstream

The downstream module covers the stages of product use, reuse, recycling, and disposal after it reaches the end-user. However, the Environmental Product Declaration (EPD) for this module excludes these processes, following a "cradle-to-gate" approach instead of a "gate-to-grave" evaluation. As a result, downstream processes are not included in this assessment.

# Content Declaration Including Packaging

| Material                | Percentage, % |
|-------------------------|---------------|
| Aluminium, primer ingot | 40-50         |
| Post-consumer material  | 0-10          |
| Pre-consumer material   | 40-50         |
| Iron                    | <1            |
| Manganese               | <1            |
| Others                  | <1            |
| Renewable material      | 0             |
| Biogenic carbon         | 0             |

| Packaging materials | Percentage, % | Biogenic carbon, % |
|---------------------|---------------|--------------------|
| Wooden Pellet       | 0-5           | 0-5                |
| PE film             | 0-5           | -                  |
| Cardboard           | 0-5           | 0-5                |
| Recycled material   | 0             | -                  |

# Environmental Information

## Potential Environmental Impact

|                                                 | Parameter                        | Unit                              | Upstream | Core     | Total    |
|-------------------------------------------------|----------------------------------|-----------------------------------|----------|----------|----------|
| Global warming potential (GWP)                  | Fossil                           | kg CO <sub>2</sub> eq.            | 7.57     | 0.83     | 8.40     |
|                                                 | Biogenic                         | kg CO <sub>2</sub> eq.            | 0.01     | -0.06    | -0.05    |
|                                                 | Land use and land transformation | kg CO <sub>2</sub> eq.            | 0.05     | 1.06E-04 | 0.05     |
|                                                 | Total                            | kg CO <sub>2</sub> eq.            | 7.63     | 0.77     | 8.40     |
| Ozone layer depletion (ODP)                     |                                  | kg CFC 11 eq.                     | 6.73E-08 | 2.00E-04 | 2.00E-04 |
| Acidification potential (AP)                    |                                  | mol H <sup>+</sup> eq.            | 0.05     | 7.43E-04 | 0.05     |
| Eutrophication potential (EP)                   | Aquatic freshwater               | 3.60E-05                          | 2.93E-03 | 3.60E-05 | 2.97E-03 |
|                                                 | Aquatic marine                   | 2.04E-04                          | 7.24E-03 | 2.04E-04 | 7.45E-03 |
|                                                 | Aquatic terrestrial              | 2.07E-03                          | 0.07     | 2.07E-03 | 0.08     |
| Photochemical oxidant creation potential (POCP) |                                  | kg NMVOC eq.                      | 0.03     | 2.32E-03 | 0.03     |
| Abiotic depletion potential (ADP)*              | Metals and minerals              | 6.64E-07                          | 3.11E-05 | 6.64E-07 | 3.17E-05 |
|                                                 | Fossil resources                 | 0.32                              | 45.2     | 0.32     | 45.5     |
| Water deprivation potential (WDP)*              |                                  | m <sup>3</sup> world eq. deprived | 2.34     | 0.02     | 2.36     |

### 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.

## Potential Environmental Impact – Additional Voluntary Indicators

| Impact category             | Unit         | Upstream | Core     | Total   |
|-----------------------------|--------------|----------|----------|---------|
| Eutrophication              | kg PO4 eq    | 0.01     | 2.11E-04 | 0.01    |
| Human toxicity              | kg 1,4-DB eq | 18.7     | 0.85     | 19.58   |
| Fresh water aquatic ecotox. | kg 1,4-DB eq | 9.56     | 2.48     | 12.04   |
| Marine aquatic ecotoxicity  | kg 1,4-DB eq | 3.21E04  | 2.02E03  | 3.41E04 |
| Terrestrial ecotoxicity     | kg 1,4-DB eq | 0.10     | 4.59E-03 | 0.10    |

# Environmental Information

## Potential Environmental Impact – Resource Use Indicators

|                                          | Parameter             | Unit                    | Upstream | Core     | Total |
|------------------------------------------|-----------------------|-------------------------|----------|----------|-------|
| Primary energy resources – Renewable     | Use as energy carrier | MJ, net calorific value | 19.6     | 5.59     | 25.2  |
|                                          | Used as raw materials | MJ, net calorific value | 0        | 0        | 0     |
|                                          | Total                 | MJ, net calorific value | 19.6     | 5.59     | 25.2  |
| Primary energy resources – Non-renewable | Use as energy carrier | MJ, net calorific value | 47.6     | 0.34     | 47.9  |
|                                          | Used as raw materials | MJ, net calorific value | 0        | 0        | 0     |
|                                          | Total                 | MJ, net calorific value | 47.6     | 0.34     | 47.9  |
| Secondary material                       |                       | kg                      | 0.50     | 0        | 0.50  |
| Renewable secondary fuels                |                       | MJ, net calorific value | 0        | 0        | 0     |
| Non-renewable secondary fuels            |                       | MJ, net calorific value | 0        | 0        | 0     |
| Net use of fresh water                   |                       | m <sup>3</sup>          | 0.33     | 4.99E-03 | 0.34  |

## Waste Indicators

| Impact category              | Unit | Up Stream | Core | Total |
|------------------------------|------|-----------|------|-------|
| Hazardous waste disposed     | kg   | 0         | 0    | 0     |
| Non-hazardous waste disposed | kg   | 0         | 0    | 0     |
| Radioactive waste disposed   | kg   | 0         | 0    | 0     |

## Output Flows Indicators

| Impact category               | Unit                  | Up Stream | Core | Total |
|-------------------------------|-----------------------|-----------|------|-------|
| Components for reuse          | kg                    | 0         | 0    | 0     |
| Material for recycling        | kg                    | 0         | 0    | 0     |
| Materials for energy recovery | kg                    | 0         | 0    | 0     |
| Exported energy, electricity  | MJ per energy carrier | 0         | 0    | 0     |
| Exported energy, thermal      | MJ per energy carrier | 0         | 0    | 0     |

# References

- ISO 14040 Environmental management - Life cycle assessment - Principles and framework
- ISO 14044 2006 Environmental management - Life cycle assessment - Requirements and guidelines
- ISO 14025 2006 Environmental labels and declarations - Type III environmental declarations - Principles and procedures
- ISO 14021 2016 Environmental labels and declarations
- ISO 14020 2000 Environmental labels and declarations - General principles
- EN 15804:2012+A2:2019 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
- The International EPD® System [www.environdec.com](http://www.environdec.com)
- The International EPD® System The General Programme Instructions v5.0.0  
<https://www.environdec.com/resources/documentation#generalprogrammeinstructions>
- The International EPD® System PCR 2022:08, Basic Aluminium Products and Special Alloys, version 1.0
- Ecoinvent 3.9.1 [www.ecoinvent.org](http://www.ecoinvent.org)
- SimaPro LCA Software [www.simapro.com](http://www.simapro.com)
- Assan Alüminyum [www.assanaluminyum.com/en/](http://www.assanaluminyum.com/en/)
- Aluminium Recycling in LCA European Aluminium Association, 2013

## Contact

### Third party verifier

SimaPro partners for India & Sri Lanka, SIPL Pvt Ltdy



LCA, GHG and ESG Consultants

### Owner of Declaration

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### LCA Practitioner & EPD Design

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