ASAŞ

Environmental Product Declaration

Cold Rolled Aluminium Sheet Heat Shield (1050-8)

Manufactured by **ASAŞ Alüminyum Sanayi ve Ticaret A.Ş.**
in accordance with ISO 14025:2006

Product recently on the market – Results of this EPD shall be used with care as the LCI data is not yet based on 1 year of production which may result in increased uncertainty.

Programme: International EPD System, www.environdec.com

Programme Operator: EPD International AB

Licensee: EPD Türkiye

EPD Registration Number: EPD-IES-0021160

Issue Date: 2026-01-19

Validity Date: 2027-01-20

Programme Information

Product Category Rules (PCR):
PCR 2022:08 Basic Aluminium Products and Special Alloys, (1.0.1) (valid until 2026-12-09)

UN CPC Code: 41534 (Plates, sheets and strip, of aluminium, of a thickness exceeding 0.2 mm)

PCR review was conducted by: The Technical Committee of the International EPD System. See www.environdec.com for a list of members.

Review chair: Hüdai Kara
The review panel may be contacted via the Secretariat www.environdec.com/contact

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different 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.

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

EPD verification by individual verifier

Third-party verifier: Stephen Forson, ViridisPride Ltd.

Approved by: International EPD System

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

Yes [x] No

Life Cycle Assessment (LCA):
LCA accountability: Yıldıray Yılmaz, Metsims Sustainability Consulting

ASAŞ Alüminyum Sanayi ve Ticaret A.Ş. has the sole ownership, liability, and responsibility for this EPD.

International EPD System

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How to Read This EPD?

An Environmental Product Declaration (EPD) is an ISO Type III Environmental Declaration based on ISO 14025 standard. An EPD transparently reports the environmental performance of products or services from a lifecycle perspective. The preparation of an EPD includes different stages, from acquiring raw materials to the end of life of the final product/service. EPDs are based on international standards and consider the entire value chain. Additionally, EPD is a third-party verified document. This EPD includes several sections described below.

1. General and Programme Information

The first part of an EPD has information about the name of the manufacturer and product/service and other general information such as the validity and expiration dates of the document, the name of the programme operator, geographical scope, etc. The second page states the standards followed and gives information about the programme operator, third-party verifier, etc. The followed Product Category Rule (PCR) is indicated on the second page.

2. Company and Product Information

Information about the company and the investigated product is given in this section. It summarises the characteristics of the product provided by the manufacturer. It also includes information about the product, such as product composition and packaging.

3. LCA Information

LCA information is one of the most important parts of the EPD as it describes the functional/declared unit, time representativeness of the study, database(s) and LCA software, and system boundaries.

The table presented in this part has columns for each stage in the life cycle. The considered stages are marked ‘X’ whereas the ones that are not considered are labelled as ‘NR’. Not all EPDs consider the full life cycle assessment for a product’s entire life stages. The ‘System Boundary’ page is also where one can find detailed information about the stages and the assumptions made.

4. LCA Results

The results of the Life Cycle Assessment analysis are presented in table format. The first column in each table indicates the name of the impact category, and their measurement units are presented in the second column. These tables show an amount at each life cycle stage to see the impact of different indicators on different stages. Each impact can be understood as what is released through the production of the declared unit of the material—in this case, 1 kg of cold rolled aluminium sheet, (heat shield) production.

The first impact in the table is global warming potential (GWP), which shows how much CO_2 is released at each stage. Other impacts include eutrophication potential, acidification potential, ozone layer depletion, land-use related impacts, etc. The second table provides results for resource use, and the third table is about the waste produced during the production. The fourth and final table shows the results for the GWP-GHG indicator, which is almost equivalent to the GWP-Total indicator mentioned previously. The only difference is that this indicator excludes the biogenic carbon content by following a certain methodology.

Owner of the EPD

ASAŞ Alüminyum Sanayi ve Ticaret A.Ş.

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Owner of the EPD

Based on its stable financial growth trend since its establishment in 1990, ASA is one of the leading manufacturers in Europe and exports to more than **90 countries** across 6 continents. With over **3000 employees**, **ASAŞ** provides services for its clients at its Aluminium Extrusion Profile, Aluminium Composite Panel, Aluminium Flat Rolled Products, PVC Profile and Roller Shutter production facilities, which are located in a total of **1.300.000 m² area**, of which **400.000 m²** is enclosed, in Turkey. The company offers the advantage of keeping all processes under control both in terms of quality & cost and getting service from a single point with its fully integrated manufacturing facilities which combine all the production functions that customers need in the supply chain. **ASAŞ GmbH**, a subsidiary of ASA, serves as a logistics and service centre with a **72.793 m²** closed area in neighbouring Koblenz city of Neuwied, Germany.

The passion for "**Adding Value**" to every job it does, the sector and the society in which it operates, and sustainability is at the heart of **ASAŞ's** business philosophy. Corporate social responsibility projects are carried out with this philosophy to strengthen the society. **ASAŞART**, positioned as an "**Art Production Centre**", operates as a learning+ sharing+ designing+ production platform that brings art and design students together with academics and professionals. Within ASAART, special projects are developed to support young talents in their art career; aluminium sculpture contests, training programmes with universities, international workshops and art exhibitions are organized. Children are at the centre of **ASAŞ' corporate** social responsibility projects. The company established the **ASAŞ Basketball Club** to support children to be successful individuals in the future with sports, social and educational activities.

ASAŞ positions itself as a solution partner with a passion for foreseeing future trends by following innovations and always offering the best for its customers by investing in technology. Therefore, while making investments, the company adopts the principles of "**continuous investment in sustainability, technology, integration and innovation**" to always serve its customers better. With this perspective, the company established the first R & D Centre in the aluminium sector in Turkey. Alloy development, process development and product development studies are carried out under the umbrella of the R&D Centre. The company develops projects to use its resources more efficiently and grows with environment-friendly investments. Besides these, **ASAŞ participates** in international projects to contribute to developing of new processes that help minimise the production processes' environmental impact and increase the energy efficiency.

ASAŞ produces a wide range of value-added products for various sectors like automotive, railway, commercial vehicles, energy, packaging, construction, consumer products, maritime, etc. worldwide. Finished and semi-finished products are produced to meet its customers' project needs. Besides this, the company enriches its knowledge in the field of production with design & product development studies and offers its high-quality products to the market under its own brands. Aluminium architectural systems (door, window, and curtain wall systems), aluminium composite panels, u-PVC door and window systems, aluminium design products (aluminium flag and lighting poles, aluminium furniture etc.), roller shutter systems, garage doors and motor control systems are product groups that the company sells with its own brand.

Product Information

Heat shields are used to reduce the effect of high temperatures in areas around equipment that generate heat. They are specifically designed to protect equipment and personnel from high heat levels. In automotive industry due to the large amounts of heat given off by internal combustion engines, heat shields are used on most engines to protect components and bodywork from heat damage. As well as protection, effective heat shields can give a performance benefit by reducing engine bay temperatures, therefore reducing the temperature of the air entering the engine.

An aluminum heat shield is a type of heat shield made primarily from aluminum or aluminum-based alloys. Aluminum is used for its excellent combination of lightweight properties, corrosion resistance, and good thermal conductivity, making it ideal for various heat protection applications. Key features of Aluminum Heat Shields are Lightweight, Corrosion Resistance, High Thermal Conductivity and Malleability. Aluminum is much lighter than many other metals, which is crucial in applications where weight is a significant factor; Aluminum naturally forms a protective oxide layer that resists corrosion, which helps ensure the heat shield remains effective over time, especially in harsh environments like high humidity or exposure to chemicals. Apart from good heat conduction, it's often used with other materials to reflect or dissipate heat rather than directly transferring it. The material can reflect a significant amount of heat away from the shielded area. Lastly Aluminum is easy to shape, which makes it adaptable for manufacturing heat shields in various sizes and configurations.

Aluminum Heat Shields can be used in various applications such as Automobiles, Aerospace, electronics military applications, and Industrial Equipment's. In the automotive industry, aluminum heat shields are used to protect components like the exhaust system, catalytic converters, and fuel tanks from high temperatures generated by the engine and exhaust system.

Specifications

Product	Standards	Description
EN AW 1050A Cold Rolled Aluminium Sheet/Coil (for Heat Shield Application)	TS EN 485-1:2016	Aluminium and Aluminium Alloys - Sheet, strip and plate - Part 1: Technical conditions for inspection and delivery
	DS/EN 485-2	Aluminium and Aluminium Alloys - Sheet, strip and plate - Part 2: Mechanical Properties
	DS/EN 485-3	Aluminium and Aluminium Alloys - Sheet, strip and plate - Part 3: Tolerances on dimensions and form for hot-rolled products
	DIN EN 485-4	Aluminium and Aluminium Alloys - Sheet, strip and plate - Part 4: Tolerances on shape and dimensions for cold-rolled products
	ASTM B209M-10	Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric)
	BS EN 1715-2:2008	Aluminium and aluminium alloys - Drawing stock-Part 2: Specific requirements for electrical applications
	BS EN 1715-2:2008	Aluminium and aluminium alloys - Drawing stock-Part 2: Specific requirements for electrical applications
	DS/EN ISO 20482	Metallic Materials - Sheet and Strip - Erichsen Cupping Test
	TS EN ISO 6506-1	Metallic materials - Brinell hardness test - Part 1: Test method
	TS EN ISO 6892-1	Metallic Materials - Tensile Testing - Part1: Method of test at room temperature

Product Information

Intended use of the product

Heat shields are used to reduce the effect of high temperatures in areas around equipment that generate heat. They are specifically designed to protect equipment and personnel from high heat levels. In automotive industry due to the large amounts of heat given off by internal combustion engines, heat shields are used on most engines to protect components and bodywork from heat damage. As well as protection, effective heat shields can give a performance benefit by reducing engine bay temperatures, therefore reducing the temperature of the air entering the engine.

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Technical Specifications

Specification	Value	Unit
Tensile strength	Min: 60, Max: 95	Rm (MPa)
Yield strength	Min: 20	Rp 0.2 (Mpa)
Elongation min. %	Min: 20 Max: 22	A50
Hardness	20	HBW
Specified thickness (mm)	Min: 0.2 Max: 1.5	mm

System Boundary

The scope of this EPD "cradle-to-gate".
As basic aluminium is a semi-finished/intermediate product that need to be further processed to obtain the final consumer product, it can be physically integrated with other products in subsequent life-cycle processes (i.e. no longer identifiable) and its final use/end-of life is unknown, system boundaries shall be limited to cradle-to-gate approach. The downstream stage is not included in the system boundaries of this study as it is not mandatory based on PCR 2022:08 Basic Aluminium Products and Special Alloys, (1.0.1).

Upstream processes (from cradle-to-gate)

Upstream processes refer to all activities and environmental impacts associated with the extraction, processing, and transportation of raw materials used in the product before they enter the manufacturing site. All these impacts are considered at this stage. Tables below show content declaration and provide information about upstream transportation.

Material	Type	Quantity (%)
Aluminium	Primary	95 - 97%
Aluminium	*Secondary	3 - 5%
Alloying elements	Primary	< 1%

The product is "free" of a specific hazardous material or substance.

*Overall, around 3% of the furnace charge includes pre-consumer scrap aluminium. Following the first option highlighted in section 4.6 of the relevant PCR, pre-consumer scrap is assumed as waste. Therefore, it is free of environmental burden.

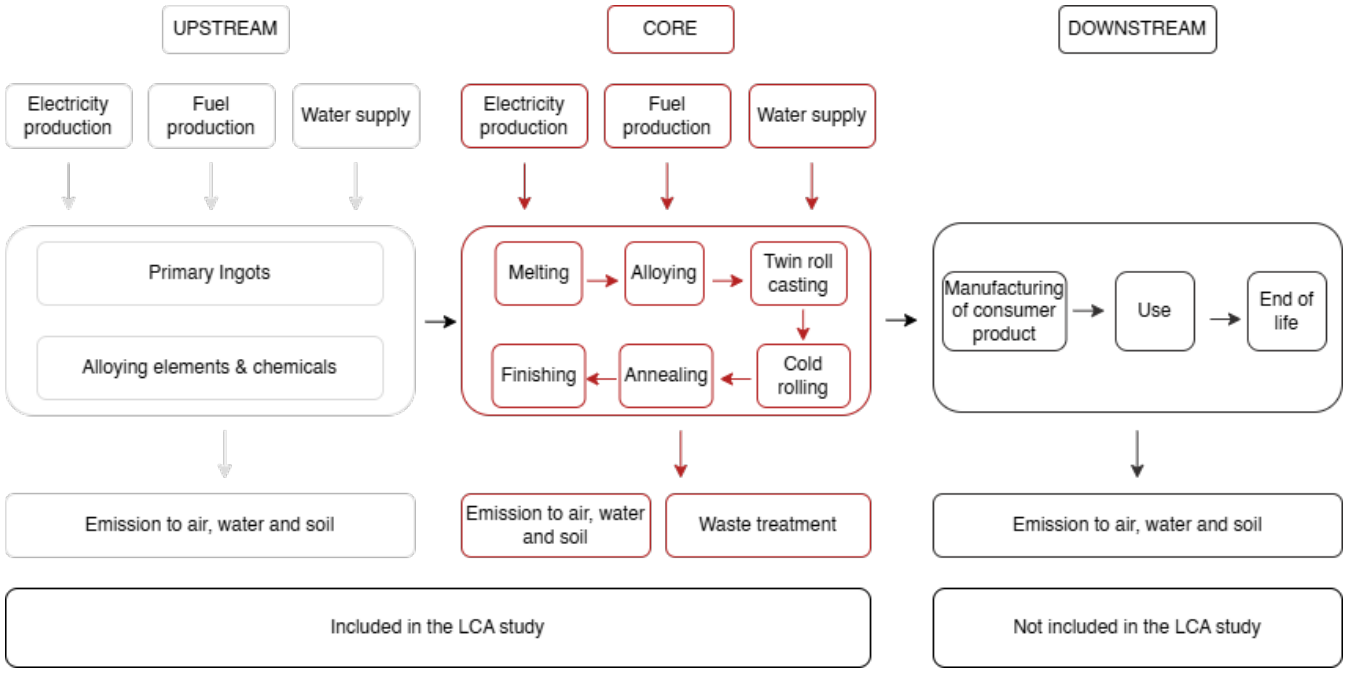
Packaging Material	Unit	Quantity
Euro-pallet	kg / declared unit	5.00E-03
Cardboard wrapping	kg / declared unit	3.00E-04
Plastic strips	kg / declared unit	2.00E-04
Nylon	kg / declared unit	1.00E-04

Upstream Transport Mode	Type
Sea	**Vehicle:** Container Ship **DWT** ***(Load Capacity)*****:** 50,000 tonnes **Fuel Type:** Heavy Fuel Oil
Road	**Vehicle:** 16 - 32 metric ton, Lorry **Motor Type:** Euro5 **Fuel Type:** Diesel

System Boundary

Core processes (from gate-to-gate)

This stage considers the production-related impacts of the investigated product. In the flat rolled production plant, for EN AW 1050A alloy the process starts with casting. Twin roll casted aluminium is produced by mixing primary aluminium with other additives in the casting process. After the casting process, aluminium alloys are treated in cold rolling, annealing, slitting and cut to length processes. The cast rolled aluminium is after sent to cold rolling and annealing processes. Cast rolled aluminium is treated flattened into different thicknesses in cold rolling mill. Electricity, water, and some lubricants are consumed in this stage. After passing through the cold rolling mill, aluminium sheet is subjected to the annealing for softening the aluminium sheet. As the last process before cutting, the coils are slitted to make the coil come to final width. As a result of all these processes, aluminium sheet is produced. After the slitting / cut to length process is completed, the flat rolled aluminium coil/sheet is ready and packaged to be delivered to the customer.



LCA Information

DECLARED UNIT
1 kg of semi-finished cold rolled aluminium sheet in solid state at the manufacturer gate.

SYSTEM BOUNDARY
According to the directives of “Basic aluminium products and special alloys” PCR, system boundary of this EPD is cradle to gate.

CUT-OFF RULES
The criteria for exclusion were set so that individual input flows less than 1% of the total, with a cumulative limit of less than 5%, could be omitted. This was contingent upon confirming that these excluded flows did not significantly alter the reported data, with “significant” defined as affecting the total by less than 5%.

REACH REGULATION
No substances included in the Candidate List of Substances of Very High Concern for authorisation under the REACH regulations are present in this product either above the threshold for registration with the European Chemicals Agency or above 0.1% (wt/wt).

DATABASE AND LCA SOFTWARE
For LCA modelling and calculation, ecoinvent database (v.3.11) and SimaPro Craft (v.10.2) LCA software were used.

LCA MODELLING, CALCULATION AND DATA QUALITY
The LCA results with the indicators as per EPD requirements are given in the LCA result tables. All energy calculations were obtained using Cumulative Energy Demand (LHV) methodology, while freshwater use was calculated with selected inventory flows in SimaPro according to the PCR. There are no co-product allocations within the LCA study underlying this EPD. The regional energy datasets were used for all energy calculations.

TIME REPRESENTATIVENESS
The data used for the LCA study concerns the period between June 2025 to October 2025.

ALLOCATIONS
Energy and resources are allocated to the heat shield (1050-8) production based on the mass. In addition, hazardous and non-hazardous waste amounts were also allocated from the total waste generation. In cases, where real data was not possible to obtain, conservation estimates are used.

SOURCE OF ELECTRICITY
All electricity consumed in the core processes is supplied from the national grid and is covered 100% by I-REC (International Renewable Energy Certificate) instruments. The I-REC certificates are sourced from geothermal power and are retired on behalf of the EPD owner for the reporting period, matching the electricity consumption (1 MWh certificate = 1 MWh consumption).

ASSUMPTIONS
Upstream road transportation is assumed to be carried out with Euro5 motor vehicles with a size class of > 32 metric tonnes where distances acquired through Google Maps.

LCA Results

The environmental performance results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks. The results of the impact of the aluminium sheet production process are presented in the impact category table analyzed using the relevant method in SimaPro Craft version10.2 which includes EF 3.1. All reported results are expressed per declared unit (DU) as required by the PCR.

Impact category indicators	Unit	Upstream	Core	Total
GWP - Total	kg CO_2 eq.	1.11E+01	2.78E-01	1.14E+01
GWP - Fossil	kg CO_2 eq.	1.11E+01	2.78E-01	1.14E+01
GWP - Biogenic	kg CO_2 eq.	4.06E-03	1.22E-04	4.18E-03
GWP - Luluc	kg CO_2 eq.	1.69E-03	1.18E-04	1.81E-03
ODP	kg CFC-11 eq.	2.33E-07	1.83E-08	2.52E-07
AP	mol H+ eq.	6.40E-02	5.06E-04	6.45E-02
EP - Freshwater	kg P eq.	1.21E-04	3.59E-06	1.25E-04
EP - Marine	kg N eq.	8.04E-03	1.29E-04	8.17E-03
EP - Terrestrial	mol N eq.	8.92E-02	1.40E-03	9.06E-02
POCP	kg NMVOC	3.70E-02	6.12E-04	3.77E-02
*ADPE	kg Sb eq.	5.83E-07	2.46E-07	8.30E-07
*ADPF	MJ	1.40E+02	4.52E+00	1.45E+02
*WDP	m^3 depriv.	9.15E-01	1.54E+00	2.45E+00

* 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. 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.

Acronyms	GWP-total: Climate change, GWP-fossil: Climate change- fossil, GWP-biogenic: Climate change - biogenic, GWP-luluc: Climate change - land use and transformation, ODP: Ozone layer depletion, AP: Acidification terrestrial and freshwater, EP-freshwater: Eutrophication freshwater, EP-marine: Eutrophication marine, EP-terrestrial: Eutrophication terrestrial, POCP: Photochemical oxidation, ADPE: Abiotic depletion - elements, ADPF: Abiotic depletion - fossil resources, WDP: Water scarcity, PM: Respiratory inorganics - particulate matter, IR: Ionising radiation, ETP-FW: Ecotoxicity freshwater, HTP-c: Cancer human health effects, HTP-nc: Non-cancer human health effects, SQP: Land use related impacts, soil quality.

Resource use indicators	Unit	Upstream	Core	Total
PERE	MJ	1.75E+00	4.76E+00	6.50E+00
PERM	MJ	8.42E-02	0.00E+00	8.42E-02
PERT	MJ	1.83E+00	4.76E+00	6.59E+00
PENRE	MJ	1.40E+02	4.52E+00	1.45E+02
PENRM	MJ	1.16E-02	0.00E+00	1.16E-02
PENRT	MJ	1.40E+02	4.52E+00	1.45E+02
SM	kg	6.17E-03	1.82E-03	7.99E-03
RSF	MJ	2.27E-04	2.62E-03	2.85E-03
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00
FW	m^3	2.23E-02	3.59E-02	5.81E-02

Acronyms	PERE: Use of renewable primary energy excluding resources used as raw materials, PERM: Use of renewable primary energy resources used as raw materials, PERT: Total use of renewable primary energy, PENRE: Use of non-renewable primary energy excluding 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, SM: Secondary material, RSF: Renewable secondary fuels, NRSF: Non-renewable secondary fuels, FW: Net use of fresh water.

LCA Results

Waste indicators	Unit	Upstream	Core	Total
HWD	kg	2.74E+00	6.50E-03	2.75E+00
NHWD	kg	5.36E+00	8.79E-01	6.24E+00
RWD	kg	1.97E-05	3.70E-06	2.34E-05

Acronmys	HWD: Hazardous waste disposed, NHWD: Non-hazardous waste disposed, RWD: Radioactive waste disposed.

Output flow indicators	Unit	Upstream	Core	Total
CRU	kg	0.00E+00	0.00E+00	0.00E+00
MFR	kg	0.00E+00	0.00E+00	0.00E+00
MER	kg	0.00E+00	0.00E+00	0.00E+00
EE (Electric)	MJ	0.00E+00	0.00E+00	0.00E+00
EE (Thermal)	MJ	0.00E+00	0.00E+00	0.00E+00

Acronmys	CRU: Components for reuse, MFR: Material for recycling, MER: Materials for energy recovery, EE (Electrical): Exported energy electrical, EE (Thermal): Exported energy thermal.

References

ISO 9001: 2015 / Quality Management Systems

ISO 50001: 2018 / Energy Management Systems

GPI / General Programme Instructions of the International EPD System. Version 4.0.

ISO 14020: 2000 / Environmental Labels and Declarations - General principles

ISO 14025 / DIN EN ISO 14025:2009-11: Environmental labels and declarations - Type III environmental declarations — Principles and procedures

ISO 14040/44 / DIN EN ISO 14040: 2006-10, Environmental management - Life cycle assessment - Principles and framework (ISO14040:2006) and Requirements and guidelines (ISO 14044:2006)

PCR for aluminium products and special alloys Basic Aluminium Products and Special Alloys, (1.0.1) (valid until 2026-12-09)

International EPD System / International EPD System is a programme for type III environmental declarations, maintaining a system to verify and register EPDs as well as keeping a library of EPDs and PCRs in accordance with ISO 14025. www.environdec.com

Ecoinvent / Ecoinvent Centre, www.ecoinvent.org

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

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