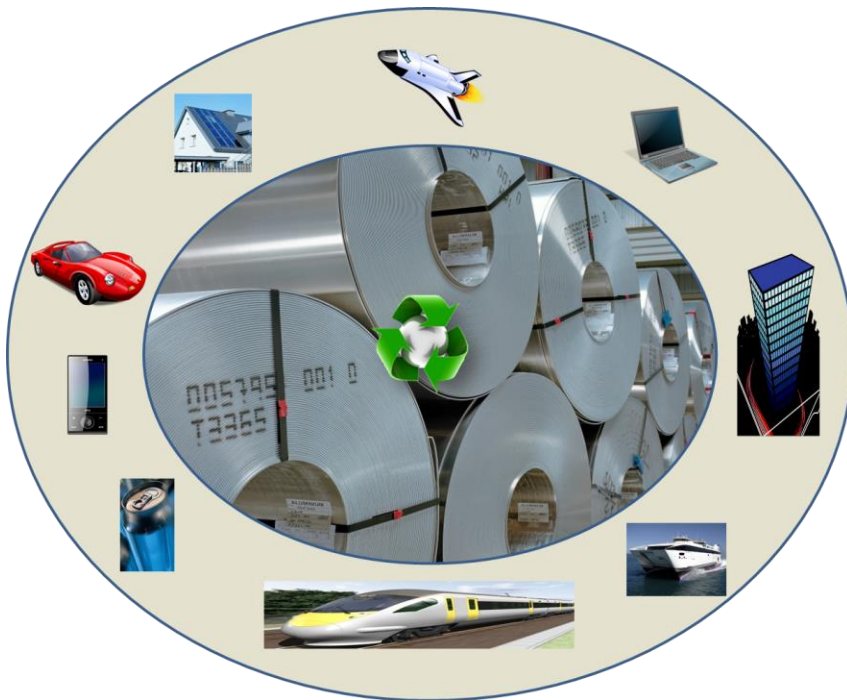


## ENVIRONMENTAL PRODUCT DECLARATION

# HOT-ROLLED ALUMINUM

INDUSTRY-AVERAGE HOT-ROLLED ALUMINUM  
MANUFACTURED IN NORTH AMERICA



The Aluminum Association and the aluminum industry are committed to responsible environmental stewardship. Aluminum is one of the most sustainable materials in use today:

- Strong and lightweight: Aluminum's favorable strength-to-weight ratio means it can be substituted for heavier materials, driving energy efficiency.
- Infinitely recyclable: Aluminum can be recycled over and over again without losing any of its fundamental properties.
- Efficiency Improvements: Through voluntary industry efforts, the North American aluminum industry has reduced the carbon footprint of primary aluminum production by 37 percent since 1995.
- Corrosion-resistant: Durable aluminum lasts longer than many competing materials, limiting the need for replacement.
- Highly recycled: Aluminum is one of the most recycled materials on the market today. And producing recycled aluminum takes just 8 percent of the energy needed to make primary aluminum.



# ENVIRONMENTAL PRODUCT DECLARATION






Hot-Rolled Aluminum Semi-Fabrication  
Products of Aluminum and Aluminum Alloys

According to ISO 14025 and EN 15804

This declaration is an environmental product declaration (EPD) in accordance with ISO 14025. EPDs rely on Life Cycle Assessment (LCA) to provide information on a number of environmental impacts of products over their life cycle. Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc. Accuracy of Results: EPDs regularly rely on estimations of impacts, and the level of accuracy in estimation of effect differs for any particular product line and reported impact. Comparability: EPDs are not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. EPDs from different programs may not be comparable.



|   |  |  |
|---|--|--|
| PROGRAM OPERATOR  | UL Environment   |  |
| DECLARATION HOLDER  | The Aluminum Association   |  |
| DECLARATION NUMBER  | 4786092064.103.1   |  |
| DECLARED PRODUCT  | Hot-Rolled Aluminum sheet or plate   |  |
| REFERENCE PCR   | Products of Aluminum and Aluminum Alloys (IBU, July 2012)  |  |
| DATE OF ISSUE   | October 16, 2014   |  |
| PERIOD OF VALIDITY  | 5 years  |  |
| EXTENSION PERIOD  | October 16, 2022   |  |
| CONTENTS OF THE DECLARATION   | Product definition and information about building physics<br>Information about basic material and the material's origin<br>Description of the product's manufacture<br>Indication of product processing<br>Information about the in-use conditions<br>Life cycle assessment results<br>Testing results and verifications |  |
| The PCR review was conducted by:  | The Independent Expert Committee   |  |
| This declaration was independently verified in accordance with ISO 14025 by Underwriters Laboratories<br><input type="checkbox"/> INTERNAL <input checked="" type="checkbox"/> EXTERNAL | <br>Wade Stout, UL Environment  |  |
|   | <br>Thomas Gloria, Industrial Ecology Consultants   |  |
| This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:  | <br>Thomas Gloria, Industrial Ecology Consultants   |  |

This EPD conforms with EN 15804

# ENVIRONMENTAL PRODUCT DECLARATION



Hot-Rolled Aluminum  
Products of Aluminum and Aluminum Alloys

According to ISO 14025

## Product

### Product Description

This EPD covers the production of hot-rolled aluminum plates and sheets, excluding aluminum foil. The results represent an average across all hot-rolled aluminum sheets and plates. The results represent an average across all hot-rolled aluminum sheets and plates manufactured in North America (United States and Canada). Averages are obtained through aggregating production-weighted data from the participating companies.

### Applications

Hot-rolled aluminum is used in a variety of market sectors, including the following:

- Transportation: automobile components, truck and trailer components, train components, aircraft components, etc.
- Building, construction and infrastructure: building roofs, sidings, wall plates, furniture and decorations, bridge and stadium components, road and traffic signs, etc.
- Packaging: beverage containers
- Consumer durables: components of consumer durable goods, such as computers, home appliances, and recreation devices and utilities; .

### Technical Data

| Name  | Value                                 | Unit                                   |
|---|---------------------------------------|--|
| Density   | 2.66-2.84                             | (kg/m <sup>3</sup> ) x 10 <sup>3</sup> |
| Melting point (Typical)   | 475-655                               | °C                                     |
| Electrical conductivity (Typical) at 20°C/at 68°F                             | Equal Volume:16-36                    | MS/m (0.58*%IACS)                      |
| Thermal conductivity (Typical) at 25°c/at 77°F                                | 113-234                               | W/(m.K)                                |
| Average Coefficient of thermal expansion (Typical) 20° to 100°c /68° to 212°F | 22.3-23.9                             | per °C                                 |
| Modulus of elasticity (Typical)   | 69-73                                 | MPa x 10 <sup>3</sup>                  |
| Hardness (Typical)  | 19-150                                | HB                                     |
| Yield strength (min)  | 15-485                                | MPa                                    |
| Ultimate tensile strength (min)   | 55-550                                | Mpa                                    |
| Breaking elongation (min) (50mm&4D)   | >1                                    | %                                      |
| Chemical composition  | Varying alloy by alloy, Al 87.17-99.6 | % by mass                              |



# ENVIRONMENTAL PRODUCT DECLARATION



Hot-Rolled Aluminum  
Products of Aluminum and Aluminum Alloys

According to ISO 14025

## Application Rules

**ASTM B209/B209M-10** Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate

**ASTM B928/B928M-13** Standard Specification for High Magnesium Aluminum-Alloy Sheet and Plate for Marine Service and Similar Environments

**ASTM B632/B632M-08** Standard Specification for Aluminum-Alloy Rolled Tread Plate

**ASTM B746/B746M-02(2012)** Standard Specification for Corrugated Aluminum Alloy Structural Plate for Field-Bolted Pipe, Pipe-Arches, and Arches

## Delivery Status

The output of hot rolling is hot-rolled coil (re-roll coil), sheet and plate, or intermediate rolling products (continuous casting products) transported to an end-use customer or to a cold rolling and finishing facility. The dimensions of the sheet and plate vary based on the product type and application.

## Base and Ancillary Materials

Hot-rolled aluminum products made in North America contain a considerable proportion of metal recycled from aluminum scrap. The metal composition of products, based on metal feedstock information collected at the melting furnaces for rolling ingot production or subsequent rolling on-site, is shown below. Product shipped to different market sectors may vary significantly on its metal compositions. Recovered aluminum from internal process (run-around) scrap is considered as a repeated closed-loop manufacturing process and therefore is excluded from metal composition declaration. Definitions of Internal Process (Run-Around) Scrap, Post-Industrial Scrap and Post-Consumer Scrap are consistent with ISO 14021/25 (2006) on environmental labels and declarations, and the related interpretations by UL Environment.

Hot-rolled aluminum products may include various types of coatings, including anodized, painted, and laquered finishes. All coating materials are included in inventory, based on averages across the industry.

| Category of Metal Source                            | Percentage (by mass) |
|---|----------------------|
| Primary Aluminum (including alloy agents)           | 34                   |
| Recovered Aluminum from Other Post-Industrial Scrap | 26                   |
| Recovered Metal from Post-Consumer Scrap            | 40                   |



# ENVIRONMENTAL PRODUCT DECLARATION



Hot-Rolled Aluminum  
Products of Aluminum and Aluminum Alloys

According to ISO 14025

## Manufacture

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Typically aluminum is delivered to a hot-rolling facility as pre-cast aluminum ingots, scrap, or molten aluminum. The metal is then melted and cast, as necessary, into ingots to be rolled, or molten metal may be formed into sheets through a process called continuous casting. Continuous casting takes molten metal and solidifies it into a continuous strip. Currently about 20% of the North American sheet and plate production is produced by continuous casting. It is worthwhile to note that continuous casting products can be either directly used for end-use purposes, or further rolled to produce thinner gauge products.

Direct chill cast aluminum ingots/slabs or continuous cast strips, while still hot, can be further treated and hot rolled. Or in other cases, completely chilled ingots or strips can be used for hot rolling but preheating must be done to heat the intermediates to a required temperature.

Hot rolling is the method of rolling metal at a temperature high enough to avoid strain-hardening (work-hardening) as the metal is deformed. The ingots are preheated to about 1000°F and fed through a hot reversing mill. In the reversing mill, the coil passes back and forth between rolls and the thickness is reduced to 4 to 5 inches with a corresponding increase in length. This part of the hot rolling process is also called a Breakdown rolling process.

Following the reversing mills, the slabs are fed to a continuous hot mill where the thickness is further reduced. The metal, called re-roll or hot band, is edge trimmed and rolled into a coil and is ready to be transferred to the cold mill.

## Environment and Health during Manufacturing

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**Air:** Hazardous air emission releases comply with regulatory thresholds.

**Water/soil:** Pollutants in wastewater discharge comply with regulatory thresholds.

**Noise:** Due to adequate acoustical absorption and mitigation devices, measurements of sound levels have shown that all values inside and outside the production plant comply with regulatory thresholds.

## Product Processing and Installation

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Further processing and installation of hot-rolled aluminum depends on the final application of the product and is outside the scope of this EPD.

## Packaging

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Product delivery packaging includes wood, steel, paper board, and sometimes plastic wraps. Packaging is included in the scope of this EPD.

## Condition of Use

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No special conditions of use are relevant for this product under the scope of this EPD.



# ENVIRONMENTAL PRODUCT DECLARATION



Hot-Rolled Aluminum  
Products of Aluminum and Aluminum Alloys

According to ISO 14025

## Environment and Health During Use

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The environmental and health effects during use are dependent on the ultimate use of the hot-rolled aluminum and are outside the scope of this EPD. The following general statements are relevant for all aluminum products:

- Aluminum products are often made from both primary and recycled ingots
- There is no relevant chemical composition difference between primary and secondary ingots if both are governed by the same alloy designation and chemical composition limit standards
- The service life of the final product depends on its application, but is typically long due to aluminum's excellent corrosion resistance
- For that same reason, maintenance needs during use are usually low.

## Reference Service Life

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Service lives for hot-rolled aluminum vary based on the application. This EPD does not cover the product use phase and therefore makes no specific claim as to a typical reference service life.

## Extraordinary Effects

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**Fire:** Aluminum products comply with all local and federal laws with respect to fire hazards and control.

**Water:** There is no evidence to suggest water runoff or exposure under normal and intended operation will violate general water quality standards.

**Mechanical destruction:** Not relevant for aluminum sheet and plate.

## Recycling Phase

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Aluminum is a highly recyclable material. During manufacturing, most process and new scrap are fed back into the production process. At the end of life, aluminum scrap is collected and sold to both secondary smelting and semi-fabrication companies. The recycling rate for aluminum scrap is assumed to be 95%. Recycling over 95% is typical for aluminum products in high volume automotive and construction market sectors (IAI 2013).

Post-industrial scrap is highly utilized within the aluminum industry. Most process and new scrap materials that occur in the manufacture and processing of hot-rolled are fed back into the production process.

## Disposal

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It is assumed that 5% of the cold-rolled aluminum products are sent to the landfill for disposal at the end of life. The European Waste Code for aluminum is 17 04 02.



# ENVIRONMENTAL PRODUCT DECLARATION



**Hot-Rolled Aluminum**  
Products of Aluminum and Aluminum Alloys

According to ISO 14025

## Further Information

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For further information on aluminum and aluminum products, please visit the Aluminum Association website:  
[www.aluminum.org](http://www.aluminum.org).

The life cycle assessment was conducted by PE INTERNATIONAL using GaBi data.



# ENVIRONMENTAL PRODUCT DECLARATION



Hot-Rolled Aluminum  
Products of Aluminum and Aluminum Alloys

According to ISO 14025

## Life Cycle Assessment

### Declared Unit

The declared unit is the production and end-of-life treatment for one metric ton of hot-rolled aluminum. The results can be converted to one kilogram by dividing by 1000.

### System Boundary

This is a “cradle-to-gate – with options” EPD. The following processes are considered in the product stages A1–A3 of the hot-rolled aluminum production:

- The provision of resources, additives and energy
- Transport of resources and additives to the production site
- Production process of hot-rolled aluminum on site, including energy, production of additives, disposal of production residues, consideration of related emissions, and recycling of production scrap (“closed loop”).

Product stages C4 and D are also included, with 95% of the hot-rolled product assumed to be recycled at the end-of-life, and 5% disposed of by landfilling. End-of-life recycling is accounted for using the avoided burden recycling methodology.

| DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED) |           |               |                            |                                   |           |             |        |                          |                            |                        |                       |                            |           |                  |   |                                    |
|---|-----------|---------------|----------------------------|-----------------------------------|-----------|-------------|--------|--------------------------|----------------------------|------------------------|-----------------------|----------------------------|-----------|------------------|---|------------------------------------|
| PRODUCT STAGE   |           |               | CONSTRUCTION PROCESS STAGE |                                   | USE STAGE |             |        |                          |                            |                        |                       | END OF LIFE STAGE          |           |                  | BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES |                                    |
| Raw material supply   | Transport | Manufacturing | Transport                  | Construction-installation process | Use       | Maintenance | Repair | Replacement <sup>1</sup> | Refurbishment <sup>1</sup> | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing | Disposal  | Reuse-Recovery-Recycling-potential |
| A1  | A2        | A3            | A4                         | A5                                | B1        | B2          | B3     | B4                       | B5                         | B6                     | B7                    | C1                         | C2        | C3               | C4  | D                                  |
| X   | X         | X             | MND                        | MND                               | MND       | MND         | MND    | MND                      | MND                        | MND                    | MND                   | MND                        | MND       | MND              | X   | X                                  |





# ENVIRONMENTAL PRODUCT DECLARATION



Hot-Rolled Aluminum  
Products of Aluminum and Aluminum Alloys

According to ISO 14025

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## Estimates and Assumptions

The LCA required only limited use of estimates and assumptions. The most relevant estimation/assumption is the end-of-life recycling rate of 95%, which is discussed in the *Recycling Phase* section. Averages and best-estimates were used to fill in minor data gaps, such as the source of ingots for some facilities. Other estimates and assumptions are discussed in detail in the LCA background report.

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## Cut-off Criteria

Input: All material flows that enter the system and are over 1% of the product mass or contribute more than 1% to the primary energy consumption are included.

Output: All material flows that exit the system and whose environmental impact makes up more than 1% of the total impact in an impact category considered are included.

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## Background Data

In order to model the life cycle for the production of the hot-rolled aluminum, the GaBi 6 software system developed by PE INTERNATIONAL was used. All relevant background data necessary for the production of hot-rolled aluminum were taken from the GaBi 2012 databases or were made available by the Aluminum Association through industry survey results. Companies participating in the project, either with AA or AIA, are provided in the *Participating Companies* section.

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## Data Quality

The data is considered of high quality. Inventory data quality is judged by its precision (measured, calculated or estimated), completeness (e.g., unreported emissions), consistency (degree of uniformity of the methodology applied on a study serving as a data source) and representativeness (geographical, temporal, and technological). To cover these requirements and to ensure reliable results, first-hand industry data in combination with consistent background life cycle inventories from the GaBi 2012 database were used.

The LCI data sets from the GaBi database are widely distributed and used with the GaBi 6 Software. The datasets have been used in LCA models worldwide in industrial and scientific applications in internal as well as in many critically reviewed and published studies. In the process of providing these datasets, they are cross-checked with other databases and values from industry and science.



# ENVIRONMENTAL PRODUCT DECLARATION



Hot-Rolled Aluminum  
Products of Aluminum and Aluminum Alloys

According to ISO 14025

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## Period under Review

Primary data collected from the participating companies and from their operational activities is representative for the year of 2010. Additional data necessary to model raw material production, energy generation, etc. were adopted from the GaBi 6.0 software system database.

During the survey, however, a small group of semi-fabrication facilities reported operational data for 2008, 2009, or 2011, depending on the time when they started to respond to the survey and the convenience of their data availability. This deviation from the defined reference year has been taken into account as it is being assumed that there are no radical changes in the technology and operational practice for semi-fabrications from the year 2008 to 2011.

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## Allocation

Allocation is used to address recycled content, post-production scrap, and waste at end-of-life. The avoided burden allocation approach was applied. Under this approach, end-of-life scrap is first balanced out with any open scrap inputs into production. Only the remaining *net scrap* is then modeled as being sent to material recycling in order to avoid double-counting the benefits of using recycled content. If more scrap is recovered at product end-of-life than is required in the manufacturing stage, the product system receives a credit equal to the burden of primary material production minus the burden of recycling scrap into secondary material based on the mass of secondary material produced. This credit represents the avoided burden of primary material production.

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## Comparability

A comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to EN 15804 and the building context, respectively the product-specific characteristics of performance are taken into account.

# ENVIRONMENTAL PRODUCT DECLARATION



Hot-Rolled Aluminum  
Products of Aluminum and Aluminum Alloys

According to ISO 14025

## Life Cycle Assessment: Results

Results given per one metric ton of hot-rolled aluminum.

### ENVIRONMENTAL IMPACTS

CML 2001 (Nov 2010)

| Parameter | Unit                                | Manufacturing | End-of-Life | Credits   |
|-----------|-------------------------------------|---------------|-------------|-----------|
|           |                                     | A1-A3         | C4          | D         |
| GWP       | kg CO <sub>2</sub> eq               | 3.93E+03      | 2.17E+00    | -1.80E+03 |
| ODP       | kg CFC-11 eq                        | 2.52E-07      | 2.50E-10    | -7.58E-08 |
| AP        | kg SO <sub>2</sub> eq               | 2.34E+01      | 8.86E-03    | -1.29E+01 |
| EP        | kg PO <sub>4</sub> <sup>3-</sup> eq | 1.09E+00      | 8.03E-04    | -5.33E-01 |
| POCP      | kg C <sub>2</sub> H <sub>4</sub> eq | 1.32E+00      | 1.00E-03    | -6.45E-01 |
| ADPE      | kg Sb eq                            | 2.26E-03      | 8.03E-07    | -9.60E-04 |
| ADPF      | MJ                                  | 4.36E+04      | 3.43E+01    | -1.69E+04 |

TRACI 2.1

| Parameter | Unit                  | Manufacturing | End-of-Life | Credits   |
|-----------|-----------------------|---------------|-------------|-----------|
|           |                       | A1-A3         | C4          | D         |
| GWP       | kg CO <sub>2</sub> eq | 3.93E+03      | 2.17E+00    | -1.80E+03 |
| ODP       | kg CFC-11 eq          | 2.68E-07      | 2.66E-10    | -8.06E-08 |
| AP Air    | kg SO <sub>2</sub> eq | 2.19E+01      | 8.99E-03    | -1.19E+01 |
| AP Water  | kg SO <sub>2</sub> eq | 2.07E-03      | 9.08E-06    | -9.70E-04 |
| EP Air    | kg N eq               | 3.64E-01      | 1.30E-03    | -1.69E-01 |
| EP Water  | kg N eq               | 6.17E-02      | 7.69E-05    | -2.71E-02 |
| SP        | kg O <sub>3</sub> eq  | 1.87E+02      | 1.40E-01    | -9.16E+01 |
| FF        | MJ                    | 3.74E+03      | 4.30E+00    | -1.08E+03 |

### RESOURCE USE

| Parameter | Unit              | Manufacturing | End-of-Life | Credits   |
|-----------|-------------------|---------------|-------------|-----------|
|           |                   | A1-A3         | C4          | D         |
| PERE      | [MJ]              | 1.81E+04      | 1.59E+00    | -1.07E+04 |
| PERM      | [MJ]              | 0.00E+00      | 0.00E+00    | 0.00E+00  |
| PERT      | [MJ]              | 1.81E+04      | 1.59E+00    | -1.07E+04 |
| PENRE     | [MJ]              | 4.36E+04      | 3.43E+01    | -1.69E+04 |
| PENRM     | [MJ]              | 0.00E+00      | 0.00E+00    | 0.00E+00  |
| PENRT     | [MJ]              | 4.36E+04      | 3.43E+01    | -1.69E+04 |
| SM        | [kg]              | 7.22E+02      | 0.00E+00    | 0.00E+00  |
| RSF       | [MJ]              | 0.00E+00      | 0.00E+00    | 0.00E+00  |
| NRSF      | [MJ]              | 0.00E+00      | 0.00E+00    | 0.00E+00  |
| FW        | [m <sup>3</sup> ] | 1.37E+05      | -8.20E+01   | -4.66E+04 |

### OUTPUT FLOWS AND WASTE CATEGORIES

| Parameter | Unit | Manufacturing | End-of-Life | Credits   |
|-----------|------|---------------|-------------|-----------|
|           |      | A1-A3         | C4          | D         |
| HWD       | [kg] | 9.84E+02      | 0.00E+00    | -6.85E+02 |
| NHWD      | [kg] | 9.20E+01      | 5.00E+01    | -2.72E+01 |
| RWD       | [kg] | 2.61E+00      | 4.42E-04    | -1.03E+00 |
| CRU       | [kg] | 0.00E+00      | 0.00E+00    | 0.00E+00  |
| MFR       | [kg] | 1.15E+01      | 9.50E+02    | 0.00E+00  |
| MER       | [kg] | 0.00E+00      | 0.00E+00    | 0.00E+00  |
| EEE       | [MJ] | 0.00E+00      | 0.00E+00    | 0.00E+00  |
| EET       | [MJ] | 0.00E+00      | 0.00E+00    | 0.00E+00  |

### Glossary

#### Environmental Impacts

|      |  |
|------|--|
| GWP  | Global warming potential                             |
| ODP  | Depletion potential of the stratospheric ozone layer |
| AP   | Acidification potential                              |
| EP   | Eutrophication potential                             |
| POCP | Photochemical oxidant creation potential             |
| SFP  | Smog formation potential                             |
| ADPE | Abiotic depletion potential for non-fossil resources |
| ADPF | Abiotic depletion potential for fossil resources     |
| FF   | Fossil fuel consumption                              |

#### Resource Use

|       |  |
|-------|--|
| PERE  | Renewable primary energy as energy carrier                 |
| PERM  | Renewable primary energy resources as material utilization |
| PERT  | Total use of renewable primary energy resources            |
| PENRE | Non-renewable primary energy as energy carrier             |
| PENRM | Non-renewable primary energy as material utilization       |
| PENRT | Total use of non-renewable primary energy resources        |
| SM    | Use of secondary material                                  |
| RSF   | Use of renewable secondary fuels                           |
| NRSF  | Use of non-renewable secondary fuels                       |
| FW    | Use of net fresh water                                     |

#### Output Flows and Waste Categories

|      |                               |
|------|-------------------------------|
| HWD  | Hazardous waste disposed      |
| NHWD | Non-hazardous waste disposed  |
| RWD  | Radioactive waste disposed    |
| CRU  | Components for re-use         |
| MFR  | Materials for recycling       |
| MER  | Materials for energy recovery |
| EEE  | Exported electrical energy    |
| EET  | Exported thermal energy       |



# ENVIRONMENTAL PRODUCT DECLARATION



Hot-Rolled Aluminum  
Products of Aluminum and Aluminum Alloys

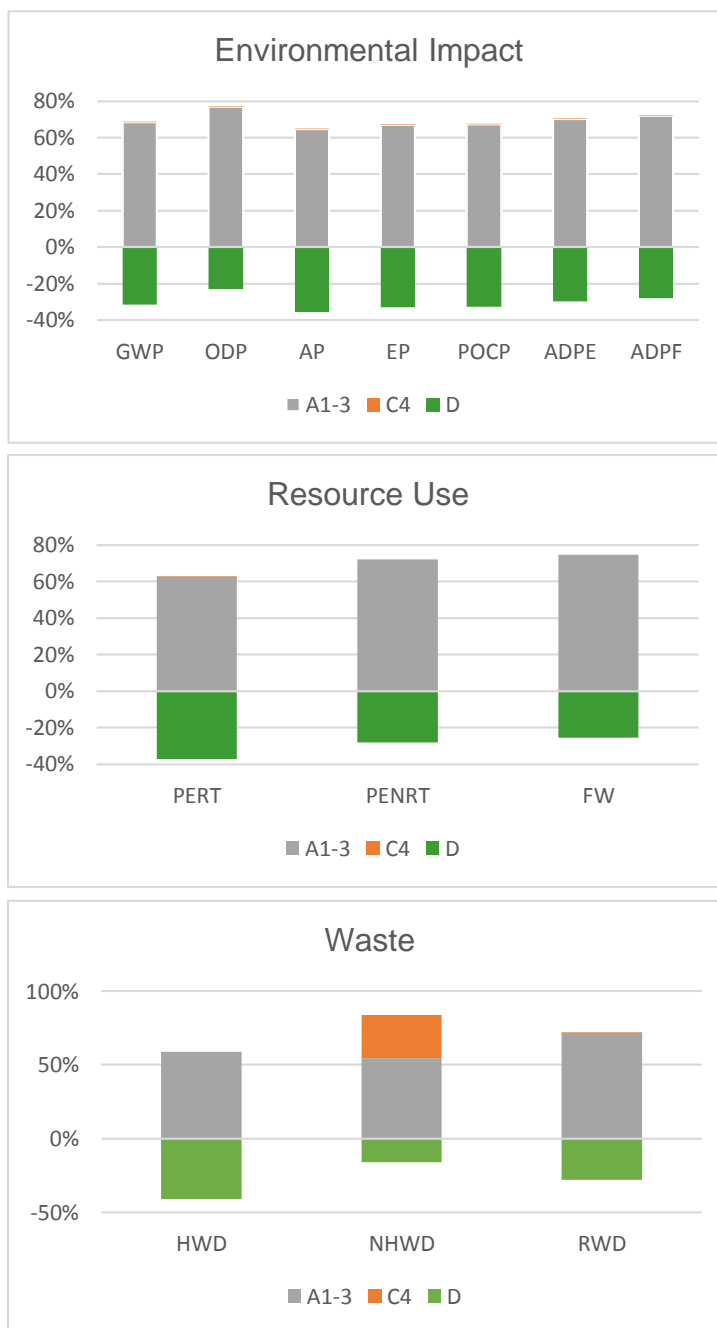
According to ISO 14025

## Life Cycle Assessment: Interpretation

The results represent the cradle-to-gate and end-of-life environmental performance of a metric ton of hot-rolled aluminum. The majority of the environmental impacts are from the production of the aluminum, however the credits from recycling the aluminum at end-of-life help to offset the initial burden.

As with any metal, the recycling rate has a significant impact on the life cycle environmental performance of hot-rolled aluminum. A 95% recycling rate is assumed. Aluminum is an ideal material for recycling because the metal can be recycled over and over again without any loss in quality (AIA 2013).

Finally, it is interesting to note that the landfilling of hot-rolled aluminum in C4 has a negative use of net fresh water (FW). This is due to the landfill collecting rain water and introducing it into the watershed as landfill leachate.



# ENVIRONMENTAL PRODUCT DECLARATION



Hot-Rolled Aluminum  
Products of Aluminum and Aluminum Alloys

According to ISO 14025

## Participating Companies

| Company                         | Data Category  | Note  |
|---------------------------------|--|---|
| Alcoa Inc.                      | Bauxite, Alumina, Primary Aluminum, Recycled Aluminum, Hot and Cold Rolling, Extrusion | Includes Kawneer and Traco                                  |
| Aleris International Inc.       | Recycled Aluminum, Hot and Cold Rolling  |   |
| Alexandria Extrusion Company    | Extrusion  |   |
| Century Aluminum Company        | Primary Aluminum   |   |
| Constellium                     | Hot and Cold Rolling   | At the time of data survey, it was owned by Rio Tinto Alcan |
| Grupo Cuprum                    | Recycled Aluminum, Extrusion   |   |
| Hydro Aluminum North America    | Bauxite, Alumina, Recycled Aluminum, Extrusion   |   |
| Jupiter Aluminum Corporation    | Recycled Aluminum, Hot and Cold Rolling  |   |
| Kaiser Aluminum                 | Recycled Aluminum, Hot and Cold Rolling, Extrusion                                     |   |
| KB Alloy                        | Recycled Aluminum  |   |
| Logan Aluminum                  | Recycled Aluminum, Hot and Cold Rolling  |   |
| Metal Exchange Corporation      | Recycled Aluminum, Extrusion   |   |
| Minalex Corporation             | Extrusion  |   |
| Nichols Aluminum                | Recycled Aluminum, Hot and Cold Rolling  |   |
| Noranda Aluminum Inc.           | Alumina, Primary Aluminum  |   |
| Novelis Inc.                    | Recycled Aluminum, Hot and Cold Rolling  |   |
| Ormet Corporation               | Alumina, Primary Aluminum  |   |
| Peerless of America             | Extrusion  |   |
| Penn Aluminum International LLC | Extrusion  |   |
| Rio Tinto Alcan                 | Bauxite, Alumina, Primary Aluminum   |   |
| Sapa Extrusions Inc.            | Recycled Aluminum, Extrusion   |   |
| Scepter Inc.                    | Recycled Aluminum  |   |
| Sherwin Alumina                 | Alumina  |   |
| Smelter Service Corporation     | Recycled Aluminum  |   |
| Tri-Arrows Aluminum Inc.        | Recycled Aluminum, Hot and Cold Rolling  |   |



# ENVIRONMENTAL PRODUCT DECLARATION



**Hot-Rolled Aluminum**  
Products of Aluminum and Aluminum Alloys

According to ISO 14025

## References

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