



# Environmental Product Declaration

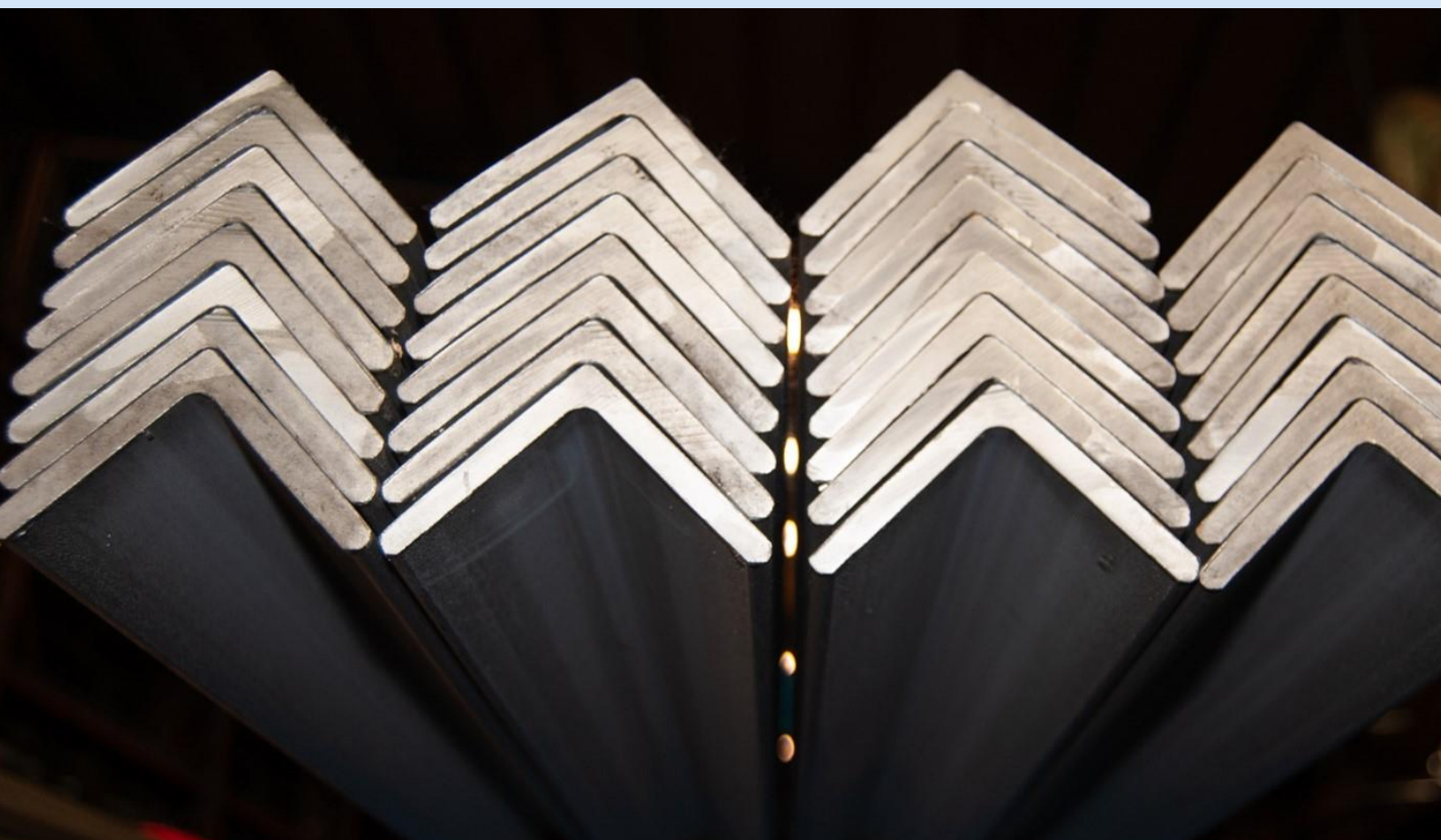
In accordance with UNE-EN ISO 14025:2010 and UNE-EN 15804: EN 15804:2012 + A2:2019/AC:2021 standards

## Stainless Steel Angle bar From Roldan, S.A. (Acerinox Group)

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# 1 Programme Information

<b>Program:</b>	The International EPD® System
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Product category rules (PCR):	<b>PCR 2019:14 Construction products version 1.3.3 (EN 15804+A2)</b>
<p>The PCR review was carried out by: The Technical Committee of the International EPD® System. Full list of members available at <a href="http://www.environdec.com">www.environdec.com</a> (<i>Members of the Committee were requested to state any potential conflict of interest with the PCR moderator or PCR committee and if so were excused from the review</i>) Chair: No chair Appointed. Contact via <a href="mailto:info@environdec.com">info@environdec.com</a></p>	
<p>Independent third-party verification of EPD and data, in accordance with ISO 14025:2006:</p> <p><input type="checkbox"/> EPD process certification <input checked="" type="checkbox"/> EPD verification</p>	
<p><b>Third Party Verifier:</b> Verifier approved by The International EPD® System. Marcel Gómez Ferrer. Marcel Gómez Environmental Consulting (<a href="http://www.marcelgomez.com">www.marcelgomez.com</a>) Tel: 0034 630 64 35 93 Email: <a href="mailto:info@marcelgomez.com">info@marcelgomez.com</a> Approved by: The International EPD® System</p>	
<p>The procedure for tracking data during the validity of the EPD involves a third-party verifier:</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	
<p><b>Manufacturer Information:</b></p> <p><u>Owner of the EPD:</u> <b>Roldan S.A</b> (Acerinox Group)</p> <p><u>Address:</u> Sto. Tomás de las Ollas, s/n 24400, Ponferrada (León)</p> <p><u>Contact:</u> Javier García González (<a href="mailto:javier.garciagonzalez@acerinox.com">javier.garciagonzalez@acerinox.com</a>)</p> <p><u>Web:</u> <a href="http://www.isaval.es">www.isaval.es</a></p>	
<p>Development of the EPD: <b>SGS TECNOS S.A.U</b></p>	

## 2 ACERINOX Group

Acerinox is one of the most competitive companies in the world in the manufacture of stainless steels and nickel alloys. It is the most global company in the sector, with a presence on five continents, factories in three of them and supply customers in 81 countries. Since its constitution, 50 years ago, it has been carrying out a continuous investment program with the development of its own technological innovations which, in some cases, have constituted a real milestone in stainless steel technology.

In terms of production capacity, Acerinox is one of the largest manufacturers world. It has three factories with an integral production process for flat products: The Campo de Gibraltar Factory (Spain, 1970), which in 2001 was the first to exceed one million tonnes per year; North American Stainless, N.A.S. (Kentucky, USA), which was founded in 1990 and in 2002 became an integral plant, and Columbus Stainless (Middelburg, South Africa), which became part of the Acerinox Group in 2002.

Regarding the production of long products, Acerinox has two factories in Spain. One being Roldan, located in Ponferrada, and the other being Inoxfil, located in Igualada. Additionally, North American Stainless (NAS) has workshops dedicated to the production of this type of product.

In March 2020, Acerinox purchased the company VDM Metals, becoming a new company of the Group. VDM Metals is a world leader in the development and manufacture of special nickel alloys, as well as high-performance stainless steels and is recognized as a benchmark for R+D+i in the sector. VDM's production network, consists in four factories located in Germany and two in the United States.

In February 2024, the Acerinox Group reaches an agreement under which its company North American Stainless (NAS) will acquire Haynes International, a leading US company in the development, manufacture and marketing of technologically advanced high-performance alloys (HPA). The incorporation of Haynes into the North American stainless steel business reinforces the Group's position in the US market and reinforces Acerinox's global leadership in HPA.

The Acerinox Group sells its products all over the world through its sales network. Its sales network consists in 35 commercial offices distributed in 31 countries, 15 commercial agents serving 26 states, 18 service centres and 25 warehouses. Thanks to this sales network, the Acerinox Group is present in 57 countries on five continents.



## **Sustainability Strategy**

Acerinox's strategic vision has always contributed to the sustainable development of the societies in which it has operated. This way of understanding the business from its origin, materializes today in a model based on the permanent search for economic, social and environmental balance, generating real value for all stakeholders in the present while preserving the legacy for future generations.

Senior Management's firm commitment in its efforts to continue achieving its short-term economic goals without neglecting the vocation of sustainability over time, is being supported by the ambitious guidelines of the European Union related to its determination to commit to a Circular Industrialization of stainless steel. In this line, it is worth highlighting the following European initiatives presented in 2020 with which Acerinox is reinforced:

- Draft Sustainable Corporate Governance Directive aimed at integrating sustainability into its management at the highest level in order to promote responsible long-term investments that improve productivity and efficiency.
- Circular Economy Action Plan that relates competitiveness with sustainability by betting on processes that are nourished by recycled materials and manufacture durable, clean

products that can be recycled at the end of their useful life. It highlights the importance of circularity as an essential requirement to achieve the goal of climate neutrality.

Acerinox has also kept pace with the CNMV's new recommendations for listed companies in terms of sustainability. Thus, the creation of a Sustainability Department, which is part of the Senior Management, has been reinforced during 2020 with the creation of a specific Sustainability Committee within the Board.

Based on these principles, work has been carried out to draw up a Sustainability Plan to support and reinforce the business strategy, to respond to the company's social, environmental and good governance challenges, with a global vision, reducing risks and developing opportunities. This Plan has been called "Acerinox Impacto Positivo 360º", which has been approved by the Board of Directors, and defines a series of actions based on the five main axes that contribute value to the "Excellence 360º" Plan, which are summarised below: Ethical, accountable and transparent governance

- Eco-efficiency and the fight against climate change.
- Circular economy and sustainable product
- Committed team, culture, diversity and safety
- Supply Chain & Community Impact

For each of the axes, lines of action and a number of actions to be developed have been established with a priority action plan 2021-2023 and another 2024-2025.

All this, guaranteeing the contribution to the Sustainable Development Goals of the 2030 Agenda and compliance with the 10 Principles of the United Nations Global Compact.

## **Management systems**

Roldan, located in Sto.Tomás de las Ollas (León), has ISO 9001:2015 certificates with registration number 01 100 3143, ISO 14001:2015 with certificate registration number: 3.00.20034 and ISO 50001:2018 with certificate registration number: 01 407 2216994.

## **Maker**

ROLDAN S.A (Acerinox Group)

Sto. Tomás de las Ollas s/n

24400 - Ponferrada (León)

Spain

**Product Category Rule (PCR):** PCR 2019:14 Construction products version 1.3.3 (EN 15804+A2)

**For more information [www.acerinox.com](http://www.acerinox.com)**

## 3 Product Information

### Name of the product or family of products covered by this EPD:

This Environmental Product Declaration (EPD) describes the **hot-rolled equal-winged angular section bar** manufactured at the Sto. Tomás de las Ollas s/n Factory, with promoter Roldan S.A. located in Ponferrada (León).

### Product description and use:

These bars manufactured by Roldán are presented in the form of a bar with an angular section and equal flange. These products are defined, according to the European standard 10020, as iron alloys containing at least 10.5% chromium and a maximum of 1.2% carbon.

The stainless steel bar with an angular section and equal flange is available in a wide range of sizes.

Stainless steel bars are manufactured in accordance with DIN-1028-10, ASTM - A484 / A 484M and EN 10056-2 standards.

The product in question is classified in UN CPC as 4124.

The hot-rolled equal-winged angle bar is marketed by Roldan S.A.

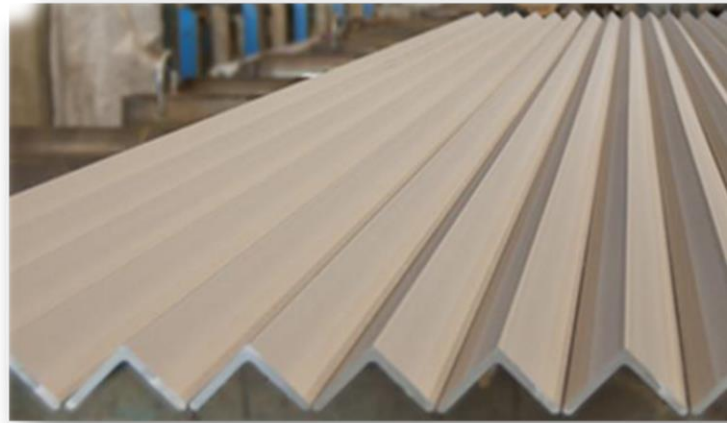


Figure 1: Hot rolled equal wing angular section bar

### 3.1 Applicability

Stainless Steel Equal Wing Angle Section Bar is a product mainly used in the construction industry. It offers good corrosion protection and, depending on the type of stainless steel used, provides mechanical properties equal to or superior to those of carbon steel.

Stainless steel is defined in the European standard EN 10088-1:2014 as encompassing the composition of stainless steels, EN 10098:1999 heat-resistant steels and alloys and EN 10302:2088 steels and alloys resistant to sustained deformation over a given duration.



## 3.2. Technical data

Board 1: Technical data Equal wing angular section bar

PARAMETER	VALUE
Fitness	solid
Colour	Silver Grey
Smell	No odor
Density	7.7 – 8.3 g/cm <sup>3</sup>
Solubility in water	Insoluble

## 3.3 Specifications

Stainless steels are stable and non-reactive under normal atmospheric conditions, since in their solid form all alloying elements are firmly bonded in the metal matrix. Stainless steel in its solid form does not contain chromium VI compounds. In contact with strong acids, stainless steel could release acidic gases and chromium could go in the form of Chromium III.

None of the substances that make up the product are intentionally released under normal or foreseeable conditions of use. Therefore, there is no risk of exposure to people or the environment.

The chemical compositions of the product angular section bar of this declaration are included in EN 10088, from which the most commonly marketed are extracted in table 3.

Board 2: Product composition table.

Results per unit declared			
System composition	Weight (kg)	Post-Consumer Recycled material, weight-%	Material biogénico, kg C/kg
Billet	1000	63	0
<b>TOTAL</b>	<b>1000</b>	<b>63</b>	<b>--</b>
Packing			
System composition	Weight (Kg)	Weight % (about the product)	Material biogénico, kg C/kg
Polyester Strapping	3.18E-03	3,18E-04	0
LDPE	3.72E-01	3,72E-02	0
Retractable	3.14E-02	3,14E-03	0
<b>TOTAL</b>	<b>4.06E-01</b>	<b>4,06E-02</b>	<b>-</b>

During the life cycle of the product, no hazardous substances included in the "List of Candidates for Authorisation (SVHC)" have been used at a rate greater than 0.1% of the weight of the product. All quantities specified in the steel component description table are unified throughout all stages of the life cycle.



Board 3:Chemical Composition

EUROPEAN STANDARD EN 10.088 EUROPEAN STANDARD EN 10.088		CHEMICAL COMPOSITION									EQUIVALENCIAS INT. STANDARDS
No. Steel/Designation Steel Code/Designation	Código ACX ACX Code	C	Yes	Mn	P	S	N	Cr	Mo	Nor	AISI
1.4307	216	<0.030	<0.75	<2.00	< 0.045	<0,03	<0,10	18,00 - 20,00	-	8,00 - 10,00	304L
1.4404	332	<0,030	<0,75	<2,00	< 0,045	<0.03	<0.10	16,50 - 18,00	2,00 - 2,50	10,00 - 11,00	316L

### 3.4 Description of system

#### components:

Board 4:Amount of biogenic carbon in the product.

Results per unit declared		
Biogenic carbon content	Unit	Quantity
Biogenic carbon contained in the product	kg C	0
Biogenic carbon contained in the packaging	kg C	0

The product is marketed in different formats with the same composition and the same production process.

## 4 LCA information

### 4.1 Declared Unity

The declared unit is 1 ton of hot-rolled equal-winged angular section bar manufactured by Roldan, S.A.

### 4.2 System limits

De “Cuna a Tumba (A + B + C + D)”

### 4.3 Reference service life

Stainless steel angles are used in the main structure of the project, so the reference service life will be equal to the service life of the construction, 50 years.

### 4.4 Cutting rules

A minimum of 99% energy consumption is considered for manufacturing facilities. 99% of the raw material is considered by mass. The following processes have been excluded:

- Manufacture of equipment used in production, buildings or any other capital goods.
- Transportation of personnel to the plant.
- Transportation of personnel within the plant.

- Research and development activities.

- Long-term issuances.

### 4.5 Assignments

This EPD refers to the totality of raw materials consumed in the production plant and have been allocated in mass terms

Whenever possible, assignments have been avoided. For cases where this has not been possible, a mass-based physical assignment is made. The data referring to the composition of the system have been obtained directly and have been analysed following the principles of *modularity* and *the polluter pays*.

### 4.6 Geographic Coverage

Global

### 4.7 Period

2022

### 4.8 LCA Software Used for Calculation

Ecoinvent 3.9 (allocation, cut-off by classification) with the Simapro 9.5.0.1 database used for LCS calculations. The LCA methods used are in accordance with the UNE-EN 15804: EN 15804:2012 + A2:2019 Standard.

## 4.9 Data quality

The data collected regarding components and energy correspond to the year 2022 and include data on raw materials consumed and energy consumption. The plausibility and consistency of the data collected has been verified. It can therefore be considered good data quality.

The calculation of the LCA of the system did not take into account flows related to the construction of production plants, application machines or the transport of employees.

## 4.10 Other Information

This LCA has been carried out by **SGS TECNOS S.A.U.** The bills for material and energy consumption have been collected and checked. The study covers at least 95% of the materials and energy per module and at least 99% of the total material and energy use of each unit process.

## 4.11 Lifecycle and Compliance

This EPD includes the steps shown in Table 5. This statement is of the cradle-to-grave type.

This statement may not be comparable with those developed in other programs or according to different reference documents; specifically, it may not be comparable with

Declarations not prepared in accordance with the UNE-EN 15804 Standard: EN 15804:2012 + A2:2019/AC:2021. Similarly, environmental declarations may not be comparable if the source of the data is different, the same information modules are not included, or they are not based on the same scenarios.

Board 5: System Limits

	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	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	ES	ES	ES	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO	GLO
Specific data used	>90% GWP-GHG					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%					-	-	-	-	-	-	-	-	-	-	-	-

## 5 Stages of the Life Cycle



Figure 2: Description of system limits: Cradle to gate with options (A+B+C+D)

### 5.1 Product Stage A1 - A3

The product stage of the equal-winged angle bar is subdivided into modules A1 supply of raw materials, A2 transport to the manufacturer and A3 manufacture according to the UNE-EN15804: EN 15804:2012 + A2:2019/AC:2021 standard that applies in this EPD.

#### A1 Raw Material Supply

This module refers to the extraction and pre-processing of raw materials and energy sources used in the manufacture of the products that make up the system.

#### A2 Transportation

This module includes the transport of raw materials to the manufacturing plant. A Euro VI truck is used as transport for this module.

### A3. Manufacturing

The manufacturing process at the Roldan plant begins with the reception of the stainless steel bars known as billets from the Acerinox plant located in Los Barrios (Cádiz) transported in trucks and/or trains. These bars have an approximate length of 7 meters and a weight of about 2 tons. These bars are introduced into the billet furnace in order to achieve their rolling temperature. The process continues with hot rolling to obtain the angle bars. Rolling consists of the successive reductions in the section of the billet by passing it through various rolling rolls. This process occurs in a few minutes, at the end of which the heat treatment plus controlled cooling is carried out. The angle bars are then subjected to a surface treatment of shot blasting and pickling.

The electricity production model considered for the production of raw materials is the distributor-specific electricity mix with 0.224487242 Kg<sub>CO2eq</sub>/kWh.

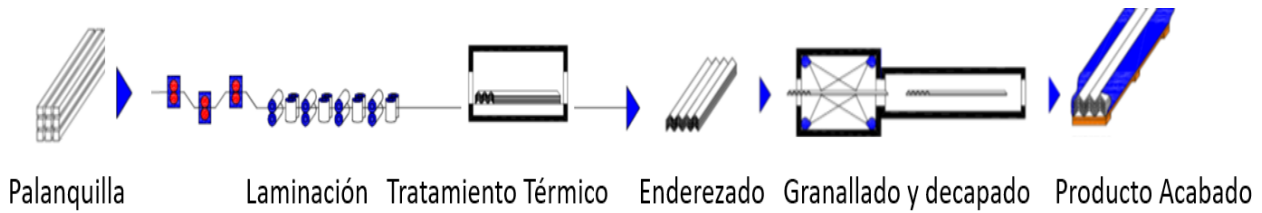


Figure 3: Simplified flow diagram of the production process of hot-rolled equal-flange angular section bars.

The waste and losses generated in the production process have been taken into account. In addition, the electricity mix used for the production stage has been the **specific electricity mix of the NATURGY supplier:**

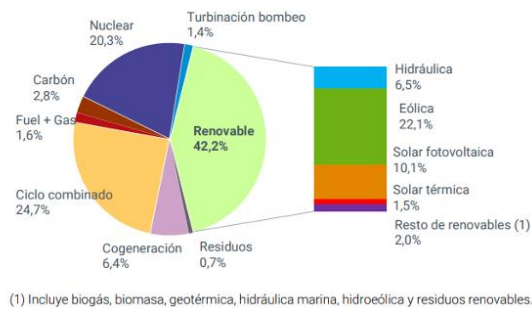


Figure 4:Electrical mix used

## 5.2 Construction process stage A4 - A5.

The construction process stage of the equal-winged angle bar product is subdivided into modules A4 transport to the site and A5 installation.

### A4 Transport to site

This module contemplates the transport of the system components from the

storage. An average transport distance is estimated depending on the final destination of the product.

PARAMETER	VALUE (expressed by Functional unit)
Fuel consumption of the vehicle or means of transport used	Truck with an average load of 16-32 t (euro 6). Cargo ship
Average distance	2057 land km 22 km by sea
Bulk density of the transported product	7.7 - 8.3 g/cm <sup>3</sup>
Load capacity utilization (in volume, including return of unladen transport)	% assumed in the Ecoinvent database
Load capacity utilization factor, in volume	1 (predetermined)

### A5 Installation

This module covers the installation of the product on site:

- There is no waste derived from the application of the product, the waste produced corresponds to the packaging of the product.
- The most representative application scenario associated with the Stainless Steel Angle Bars product does not require the use of water or energy as it is a manual installation.

PARAMETER	VALUE (expressed by functional unit)
Secondary materials used in the installation	None
Water Use	0 Liters
Electricity consumption during the installation process	It is considered despicable.
Material residue during on-site installation	1% of the components – 0.01 Kg
Waste on site (collection for recycling, energy recovery (recovery) or landfill (specifying the route))	Product packaging waste is landfilled. Conservation methodology: product waste deposited in landfill.
Packaging waste to treatment centre	0,000 kg
Packaging waste to landfill	0.406 kg
Direct emissions to air, soil or water	They are not generated.
Packaging per kg recycled	0,000 kg

### 5.3 Stage of Use (excluding possible savings) B1 - B7.

This stage refers to the operation of the building including any emission to the environment caused by the use of the product (B1) or by subsequent technical operations: maintenance (B2), repair (B3), replacement (B4) or rehabilitation (B5), use of energy in service (B6) and use of water in service (B7). Undeclared modules.

- **B1:** The use of the product does not generate emissions.
- **B2-B5:** The performance of the product in question allows us to conclude that its service life equals or

exceeds the useful life of the building. Once applied, system components do not require actions that depend on the end user.

- **B6, B7:** The product does not use water or electricity during the operational life of the building. And the energy and emissions savings resulting from the system's insulating properties have not been accounted for.

### 5.4 End-of-life stage, C1-C4.

This phase is made up of the modules related to the end of life, C1 to C4, detailed below:

- **C1 Deconstruction, demolition:** As the demolition and/or dismantling of the product is part of the demolition of the building itself, it is assumed that the environmental impact is extremely low.
- **C2 Transport:** Includes the transfer of construction waste from the site to the waste treatment point.
- **C3 Waste treatment:** Includes the reuse, recovery and/or recycling of waste. Directive 2018/851 establishes that construction and demolition waste must be destined for reuse, recycling or other forms of recovery



operations at least 70% and therefore it is considered that the product is sent to recovery after the demolition of the building together with the concrete material extracted in 70%.

- **C4 Waste disposal:** It is assumed that 30% of waste is disposed of in a landfill and an average distance of 50 km is considered.

to recycling and 30% of the product is taken to landfill, so it has been considered an environmental benefit.

In this module, a 70% saving resulting from recycling carried out throughout the life cycle has not been computed and the net balance of raw material is considered.

Board 6:Stage C1-C4

PARAMETER	VALUE (expressed by declared unit)	
Collection process (mixed with the rest of the CDW)	1 ton of product.	
Recovery System	Valorization	70%
		0.7 ton
Disposal (in landfill)	Stainless steel bar	30%
		0.3 ton
Transport assumptions for scenario development	Medium Duty Truck 16-32 t (Euro 6)	
Distance to landfill	50 km	

## 5.5 Reuse /recovery/recycling potential, D.

Module D declares the environmental benefits of reusing and recycling products, as well as energy recovery.

This EPD considers the environmental loads avoided as a result of recycling carried out throughout the life cycle of the product, considering that 70% of the product is taken

## 6 Environmental impacts of the product

The LCA results are detailed in the tables on the following pages together with the interpretation of the overall impacts produced per declared unit (1 ton of product). Estimated impact results are only relative statements that do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins, or risks

To perform the LCA, the Simapro 9.5.0.1 software has been used, together with the Ecoinvent 3.9 database.

The following impact models have been used:

- CML-IA baseline V3.07/ EU25.
- ReCiPe 2016 Midpoint (H) V1.06 / World (2010) H.
- EDIP 2003 V1.07 / Default.
- Cumulative Energy Demand V1.11
- EF 3.1 Method (adapted) V1.02 / EF 3.1 normalization and weighting .

## IMPACT RESULTS

# 7 Environmental information

POTENTIAL ENVIRONMENTAL IMPACTS OF HOT ROLLED EQUAL FLANGE ANGLE BAR PRODUCT																
Parameters		TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global warming potential - fossil fuels (GWP-fossil)	kg CO2 eq	3.18E+03	3.35E+02	3.75E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.95E+00	8.14E+00	2.19E+02	7.57E-01	- 3,46E+02
Global Warming Potential - Biogenic (GWP-Biogenic)	kg CO2 eq	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0,00E+00
Global warming potential - land use and land-use change (GWP-luluc)	kg CO2 eq	4.15E+00	1.34E-01	4.57E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.95E-04	3.26E-03	2.89E-01	2.58E-05	4,54E-02
Global warming potential - total (GWP-total)	kg CO2 eq	3.18E+03	3.35E+02	3.75E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.95E+00	8.15E+00	2.20E+02	7,57E-01	- 3,46E+02
Stratospheric Ozone Depletion Potential (ODP)	kg CFC11 eq (NA)	2,65E-04	7,77E-05	3.57E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.45E-07	1.89E-06	1.10E-05	1.57E-07	-7,72E-06

# POTENTIAL ENVIRONMENTAL IMPACTS OF HOT ROLLED EQUAL FLANGE ANGLE BAR PRODUCT

Parameters		TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Acidification potential of soil and water resources, (PA)	mol H+ eq (NA)	1.15E+01	9,58E-01	1.35E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.11E-02	2.31E-02	9,73E-01	7,80E-03	- 1,08E+00
Eutrophication potential - freshwater (EP-freshwater)	kg P eq	8,83E-02	2.39E-03	9.52E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.31E-05	5,81E-05	4.49E-03	2.69E-06	-1,36E-02
Marine eutrophication potential (EP-marine)	kg N eq (NA)	2.05E+00	1.91E-01	2.44E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.82E-05	4.59E-03	1.70E-02	3.39E-03	-2,20E-01
Eutrophication potential - terrestrial (EP-terrestrial)	mol N eq (NA)	2.43E+01	2.13E+00	2.86E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.82E-02	4.59E-03	1.69E-01	3.39E-03	- 2,62E+00
Photochemical Ozone-Creating Potential (POCP)	kg NMVOC eq (NA)	8.84E+00	8.15E-01	1.03E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.99E-01	5.12E-02	1.93E+00	3.72E-02	- 1,81E+00
Abiotic Depletion Potential - Non-Fossil Resources (ADPE)	kg Sb eq (2)	1.11E-01	1.19E-03	1.21E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.48E-02	1.97E-02	5.49E-01	1.04E-02	-2,61E-04

# POTENTIAL ENVIRONMENTAL IMPACTS OF HOT ROLLED EQUAL FLANGE ANGLE BAR PRODUCT

Parameters		TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Abiotic Depletion Potential - Fossil Resources (ADPF)	MJ, net calorific value (2)	4.89E+04	5.08E+03	5.57E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.03E-06	2.89E-05	8.63E-03	3.65E-08	- 2,52E+03
Water Deprivation Potential (User) (WDP)	m3 depriv. (2)	7.78E+02	1.55E+01	8.16E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.49E-02	3.76E-01	2.21E+01	4.08E-03	3,14E+01

# POTENTIAL ENVIRONMENTAL IMPACTS OF HOT ROLLED EQUAL FLANGE ANGLE BAR PRODUCT

Parameters		TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global warming potential - fossil fuels (GWP-fossil)	kg CO2 eq	3.19E+03	3.34E+02	3.75E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.93E+00	8.13E+00	2.21E+02	7.48E-01	-3,35E-01

# ADDITIONAL AND VOLUNTARY ENVIRONMENTAL IMPACTS OF THE HOT ROLLED EQUAL FLANGE ANGLE BAR PRODUCT

Parameters		TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Potential incidence of diseases by emission	PM (PM) - disease inc. (NA)	1.30E-04	2.69E-05	1.74E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.10E-06	6.54E-07	1.57E-05	2.09E-07	-1,64E-05
Potential of relative human exposure efficiency	U235 (IRP) - kBq U-235 eq (1)	3.01E+02	2.21E+01	3.28E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.31E-01	5.36E-01	4.41E+00	4.24E-02	7,39E+00
Potential Comparative Toxic Unit for Humans (HTP-c)	CTUh (2)	7.13E+04	3.99E+03	8.13E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.17E+01	9.69E+01	5.83E+03	5.11E+00	-1,23E+04
Potential Comparative Toxic Unit for Humans (HTP-nc)	CTUh (2)	1.05E-04	1.28E-07	1.06E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.23E-09	3.12E-09	1.48E-07	6.25E-11	2,53E-06
Potential comparative toxic unit for ecosystems	CTUe (2)	2.07E-05	4.03E-06	3.08E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.30E-08	9.79E-08	5.90E-06	7.59E-09	7,07E-05
Soil Quality Index (SQP) Potential	Pt (2)	1.11E+04	3.54E+03	1.62E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.91E+00	8.60E+01	1.51E+03	1.24E+01	-7,28E+02



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### PRODUCT RESOURCE USAGE HOT ROLLED EQUAL WING ANGLE BAR

Parameters		TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Non-renewable secondary fuels	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net freshwater use	m3	1,49E+01	5,75E-01	1,63E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3,09E-03	1,40E-02	7,64E-01	2,16E-04	1,20E+00

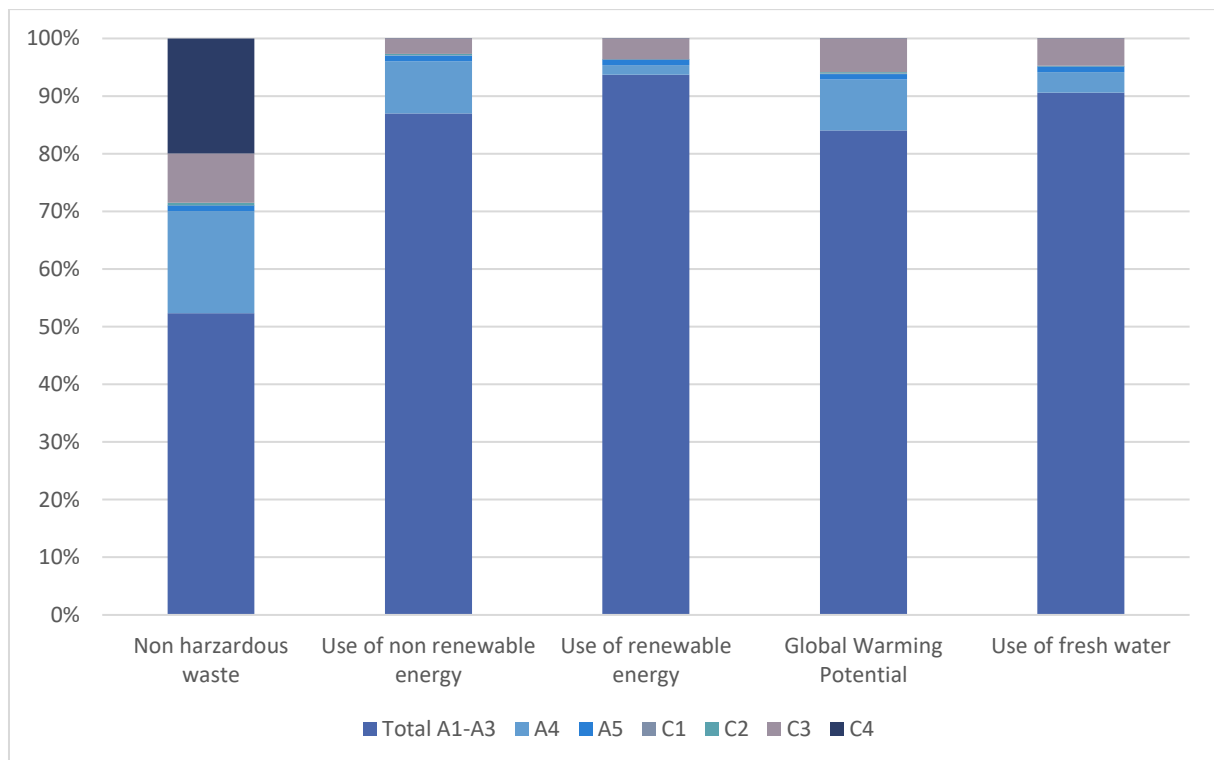
### PRODUCT WASTE CATEGORY HOT-ROLLED EQUAL-WINGED ANGLE BAR

Parameters		TOTAL A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	3,44E-02	1,33E-02	4,67E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1,49E-04	3,22E-04	4,62E+00	2,54E-05	-4,60E-02
Non-hazardous waste disposed	kg	7,85E+02	2,66E+02	1,53E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7,38E-02	6,47E+00	1,28E+02	3,00E+02	3,88E+01
Radioactive waste disposed	kg	2,31E-01	3,43E-02	2,71E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3,74E-04	8,34E-04	4,95E-03	6,96E-05	5,84E-03

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## 8 Interpretation of the LCA

The following graph allows us to determine which stages of the Life Cycle have the greatest impact on the selected environmental indicators.



## 9 Health Information

View the safety data sheets for the system components.

<https://www.acerinox.com>

## 10 Positive contributions to the Environment

Roldan (Acerinox Group), an organization dedicated to the design, development, production, and marketing of stainless steel, in addition to being committed to complying with the quality, environmental management and health and safety policy, linked to our management system, shows a firm commitment to the environment and develops products thinking about an efficient future, betting on R+D+i.

## 11 Information relating to the EPD

This EDP is a product declaration of hot rolled equal flange stainless steel angle bar.

### Differences from previous versions

This is the first version of the Environmental Product Declaration (EPD) and LCA.

## 12 Source of Information

**Scope:** Spain

**Period:** 2022

The information has been obtained from the Ecoinvent 3.9 databases and/or from raw material suppliers.

<b>Raw Materials</b>	Generic databases, and information from suppliers or producer associations
<b>Production</b>	Own data
<b>Transport</b>	Generic or specific information
<b>Application</b>	Generic or specific information
<b>Life in Use</b>	Generic information
<b>End of Life</b>	Generic information
<b>Energy</b>	Specific information

## 13 References

1. General Programme Instructions of the International EPD® System. Version 4.0.
2. ISO 14020:2000: Environmental labels and declarations — General principles
3. ISO 14025:2006, Environmental labels and declarations – Type III environmental declarations – Principles and procedures (2010).
4. ISO 14040, Environmental Management – Life Cycle Analysis – Principles and Framework (2006).
5. ISO 14044:2006, Environmental management – Life cycle analysis – Requirements and guidelines (2006).
6. PCR 2019:14 Construction products - version 1.3.3 - EN (2019): EN 15804:2012+A2:2019, Sustainability of construction works – Environmental product declarations – Core rules for product category of construction products)
7. UNE-EN 15804:2012+A2:2019/AC:2021 – Environmental Product Declarations – Basic Product Category Rules for Construction Products (2021).
8. ACV Roldan (2024) v0.