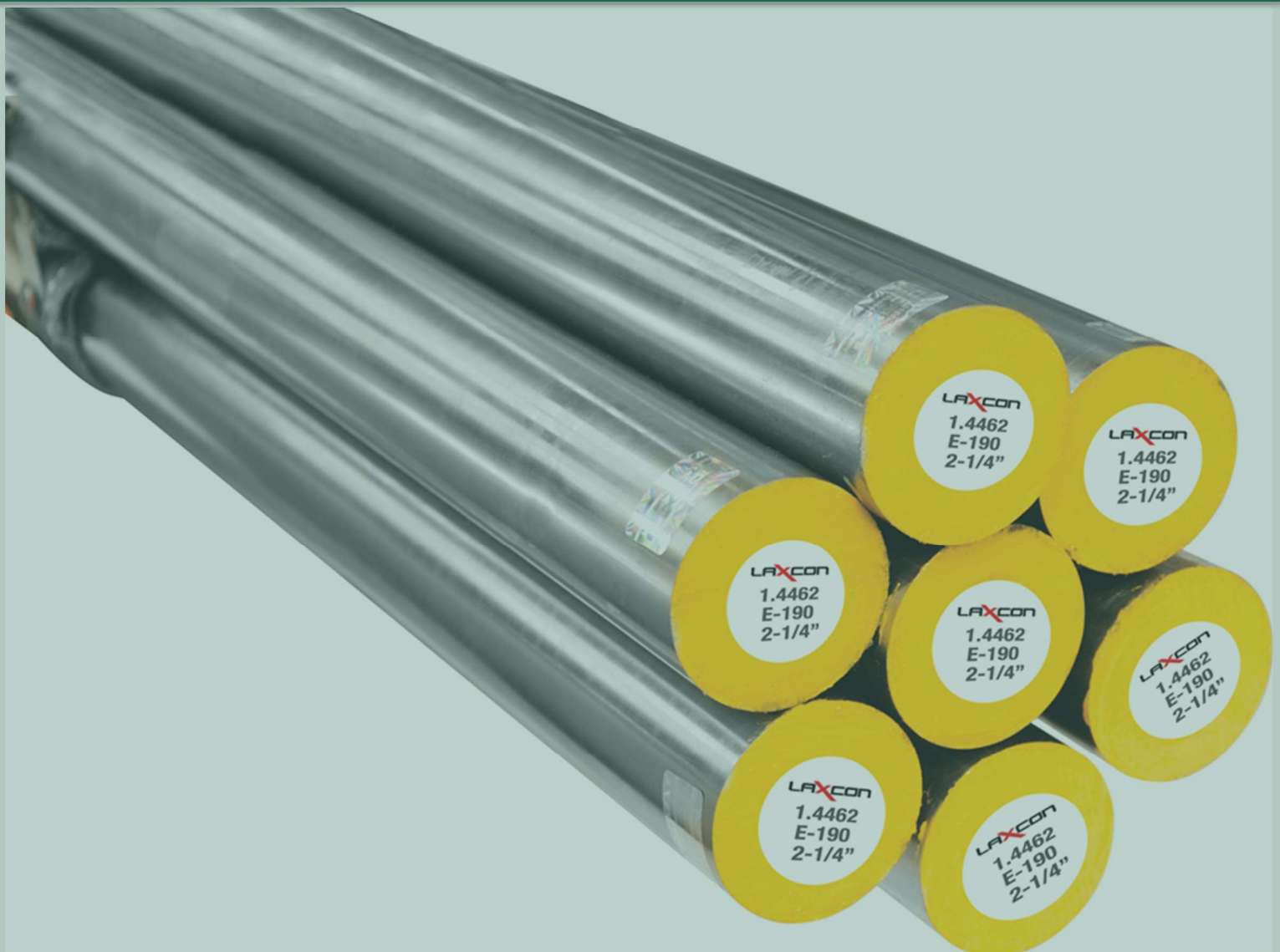


## Environmental Product Declaration

In accordance with ISO 14025:2006 for: **Stainless Steel Cast & Rolled Products**

|                          |                                                                                           |
|--------------------------|-------------------------------------------------------------------------------------------|
| Programme:               | The International EPD® System, <a href="http://www.environdec.com">www.environdec.com</a> |
| Programme operator:      | EPD International AB                                                                      |
| EPD registration number: | S-P-09813                                                                                 |
| Publication date:        | 2023-12-13                                                                                |
| Valid until:             | 2028-12-12                                                                                |



## Table of Contents

|                                         |    |
|-----------------------------------------|----|
| Programme information .....             | 3  |
| Company information .....               | 4  |
| Product information .....               | 5  |
| Manufacturing Process Description ..... | 7  |
| LCA Information .....                   | 8  |
| Environmental Performance .....         | 10 |
| References .....                        | 12 |

## Programme information

|                                                                                                            |                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Programme:</b>                                                                                          | <p>The International EPD® System</p> <p>EPD International AB<br/>Box 210 60<br/>SE-100 31 Stockholm<br/>Sweden</p> <p>www.environdec.com<br/>info@environdec.com</p> |
| <p><i>"EPDs within the same product category but from different programmes may not be comparable."</i></p> |                                                                                                                                                                      |

|                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Accountabilities for PCR, LCA and independent, third-party verification</b>                                                                                                                                     |
| <b>Product Category Rules (PCR)</b>                                                                                                                                                                                |
| PCR: <i>BASIC IRON OR STEEL PRODUCTS &amp; SPECIAL STEELS, EXCEPT CONSTRUCTION STEEL PRODUCTS and UN CPC code 4112 AND 412 VERSION 2.0 (2020-03-27)</i>                                                            |
| PCR review was conducted by: <i>The Technical Committee of the International EPD® System</i><br>Chair: Massimo Marino                      Contact: info@environdec.com                                            |
| <b>Life Cycle Assessment (LCA)</b>                                                                                                                                                                                 |
| LCA accountability: Deutsch Quality Systems (India) Private Limited                                                                                                                                                |
| <b>Third-party verification</b>                                                                                                                                                                                    |
| Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:<br><br><input type="checkbox"/> EPD process certification <input checked="" type="checkbox"/> EPD verification |
| Third-party verifier: Sunil Kumar CS, Chakra4 Sustainability Consulting Services,<br><br>Approved by: The International EPD® System                                                                                |
| Procedure for follow-up of data during EPD validity involves third-party verifier:<br><br><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                                                      |

## Company information

### Owner of the EPD:

Laxcon Steel Limited

Web: [www.laxconsteels.com/](http://www.laxconsteels.com/)

Phone: 91-2717-610800

Contact: SP SINGH DHAKA- GM (EHS) – Email: [ehs@laxconsteels.com](mailto:ehs@laxconsteels.com)

Manufacturing Address: Plot No. 235, Village Sari, Nh-8a, Taluka Sanand, Sarkhej-Bavla Road, Ahmedabad

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

### Description of the organisation:

Laxcon Steels Limited is an India's fully integrated steel making company head quartered in Ahmedabad, Gujarat, India and a leading producer of high-quality stainless and special steels. Our state-of-art steel plant offers a comprehensive solution for all Stainless & Special Steel Products. The company was established in 1978 with one manufacturing unit in Ahmedabad admeasuring about 57000 Sq. Meter Area and today Company has established four Manufacturing units: three in Ahmedabad and one in Ghaziabad, UP.

For the past five decades, Laxcon Steels has been serving the global steel industry with an extensive range of stainless-steel long products, including Bright Bars (Round/Square/Hexagons/Reinforcement bars/Forged bars/Pump Shaft Quality bars), HRAP Equal/Unequal Angles, HRAP Flat Bars, HRAP Channels, HRAP T-profiles, Threaded Rods, Continuous Cast Billets/Blooms/Hot Rolled Billets, Forging quality Ingots.

Its advanced Melting Shop produces high-quality stainless-steel grades with an Annual capacity of 140,000 Metric Tons. We offer a diverse range of stainless steel and special grades, such as Austenitic (300 series), Martensitic & Ferritic (400 series), Duplex steels (F-51/F-60/2205/1.4462), Precipitation Hardening (17-4PH, 1.4542, 15-5PH), and any special or customized grades tailored to our customer's specific requirements.

With a dedicated team over 1500 skilled employees, Laxcon Steels ensure that its extensive quality system, health & Safety measures, and environment management systems deliver flawless products, which its customers can utilize directly. As a customer-centric organization, Laxcon continuously strive to satisfy its valued clientele. Consequently, the demand for Laxcon products has grown worldwide, attracting inquiries and orders from customers in more than 80 countries.

Laxcon Steels cater to a diverse range of industries, including Ship Building, Heavy Engineering, Oil & Gas, OEMs, Nuclear Power, Food & Dairy, Infrastructure, Offshore, Chemical Industry, Distributors, and Service Centers.

Since Its Origin, the Company is concerned about the production, quality standards and safeguarding of social and environmental aspects in its operation. The company has Integrated Management system which guarantees continuous process improvement and guarantees the quality of products and services they offer.

### Accolades & Accreditation

The Company has accredited following certification to its credit:

ISO 9001: 2015, ISO 14001:2015, ISO 45001: 2018, IATF 16949: 2016 Certification and also obtained NORSOK, PED, CE Marking, LR Marine, ABS, BIS-IS 6603:2001, BIS IS 4368:1967, BIS IS 6529:1996 Approvals.

Laxcon Steels is also having NABL Approved Quality Laboratory to cater the effective product quality monitoring & testing system.

The Company Has also conducted the Organization carbon footprint in Financial Year April 2021-March2022 as per ISO 14064:1-2018. The Emission of the Organization in report year are mentioned below and the GHG Emission Intensity is 1.37 MT CO<sub>2</sub>e/MT of Production.

### Name and location of production site:

Plot No. 235, Village Sari, NH-8a, Taluka Sanand, Sarkhej-Bavla Road, Ahmedabad

## Product information

**Product name:** The product in this EPD is Stainless Steel Cast & Rolled Products

**UN CPC code:** 412

**Geographical scope:** India

### Product description:

The Stainless-Steel Cast & Rolled products are used in oil & gas, food industry, engineering, utensils, and automobile segments. The generic details of products covered under this category of EPD is as follows:

- Length – The products range in length between 1.5 meters to 6 meters
- Diameter – The products range in diameter between 16 mm to 240 mm

The range of products included under this EPD are

1. Stainless Steel Cast & Rolled Long Products
2. Alloy Steel Cast & Rolled Long Products
3. Special Steel Cast & Rolled Long Products

The above listed categories of products are manufactured in different physical shapes by the Laxcon Steels based on customer demand, and names based on their shape like Bright Bars, Rolled Black Bar, Forged Bar, Precision Shaft Quality Bars, Continuous Cast Billets, Forging Quality Ingots, and Rolled Quality Angles. The images of some of the product available in different shapes are shown below.



Table 1 below shows the contents of the products that are listed above. The products covered in this EPD have varying composition and the chemical content of all these products is represented by the percentage ranges as indicated.

For a declared unit of 1 tonne, there is no change in the material contents and thus no difference in the environmental impact of these products.

*Table 1 Range of Chemical Content of all the products under the EPD expressed as percentage*

| Chemical Contents | Content (%)  |
|-------------------|--------------|
| Fe                | < 95         |
| C                 | 0.02 to 1.20 |
| Mn                | Max 2        |
| P                 | 0.03 to 0.10 |
| S                 | 0.03 to 0.15 |
| Si                | 0.1 to 1.5   |
| Ni                | 0.4 to 14.0  |
| Cr                | 16 to 20     |
| Mo                | 2 to 6       |

### Recycled material

Laxcon Stainless Steel Cast & Rolled Products are a mix of alloy and steel scrap recollected throughout the country (post-consumer). In the production of Stainless-Steel Cast & Rolled Products, the steel scrap that is used as a raw material represents about 98% of the total weight with alloy representing the remaining 2% of the raw materials.

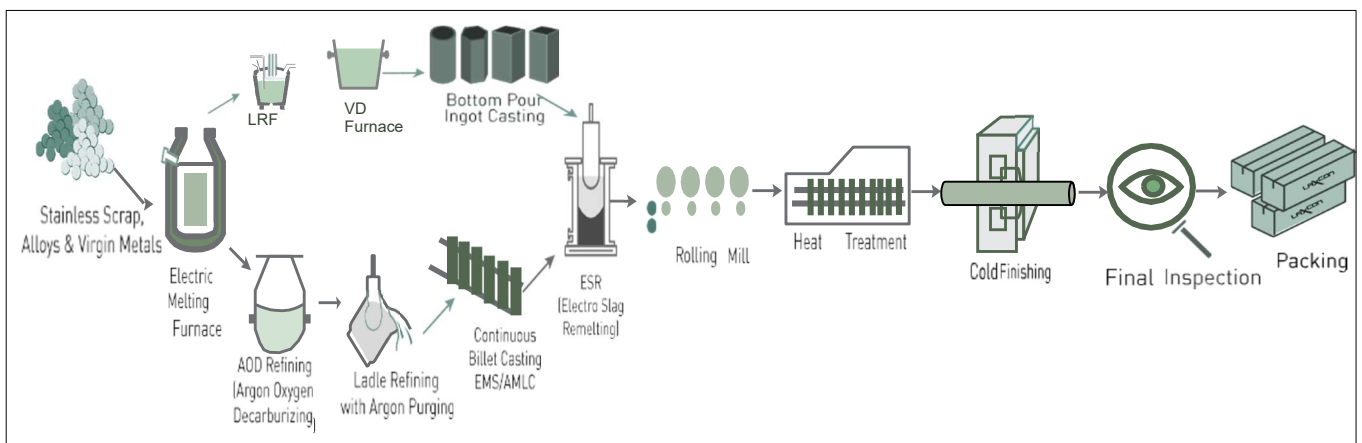
## Manufacturing Process Description

The following are the steps of manufacturing for Stainless Steel Cast & Rolled Products at laxcon Steels;

- Scrap Handling & Preparation of Charge Mix
- Scrap Charge Mix Melting into Electric Induction Furnace
- Argon Oxygen Decarburization process in AOD Convertor for Steel Refining
- Ladle Refining Process
- Billet Continuous Casting/Ingot Casting
- Electro Slag Re-melting (ESR) Process
- Hot Rolling Process for Rolled Long Products
- Heat Treatment
- Finishing (Straightening, Sizing & Grinding)
- Peeling & Bright Bar
- Final Quality Inspection
- Packing & Dispatch

A summary description of the production is that the manufacturing of Rolled Long Steels process starts with melting of Scrap Charge Mix. The scrap Charge mix is melted into Electric Induction furnace and convert into homogenous molten steel and the molten steel is then transferred to AOD Convertor for refining of molten steel. In refining process, the molten steel is decarbonized with the help of the liquid Oxygen, Argon, Lime & Dolomite and fix the composition of steel by adding of alloys (if required). The Temperature in the refining process is around 1600-1650 degree Celsius. For Alloy Steel product, the molten steel is refined through Ladle refine & Vacuum degassing (VD) process. The refined molten steel is proceeded to either billet Continuous Casting Machine or Ingot casting as per requirement for billets & ingot production.

After casting of Billets, billets are cut & sized for rolling process in Hot rolling Mill, where billets are reheated and soaked in reheating furnace at the Temperature range from 1200 to 1250 degree Celsius to produced cast & rolled long products in various shape as per customer demand. The rolled long product is sent for heat treatment (if required) for further purification. The final step is cooling, finishing (Sizing, Straightening, grinding), Cold rolling, Peeling, final Quality Inspection and packing for dispatch.



*Figure 1 Product making Process for Stainless Steel Cast & Rolled Products at Laxcon Steels*



## LCA Information

A Life Cycle Assessment (LCA) is a technique for assessing the aspects and potential environmental impacts associated with a product over its entire life cycle, covering the Upstream and Core processes.

An Environmental Product Declaration (EPD) is an independently verified and registered document that communicates in a transparent manner, comparable information about the life cycle environmental impacts of products across various categories.

The following information describes the scope and methodology of this EPD for Laxcon steel.

**Declared Unit:** This EPD has a declared unit of 1 tonne of Stainless-Steel Cast & Rolled Products manufactured in India and ready for distribution.

**Reference service life:** This aspect is not defined because it is not relevant for this study. Since the scope only includes upstream, core processes and transportation of finished products, according to the system boundary of study and requirements of the Product Category Rules (PCR).

**Time representativeness:** Foreground data on physical properties, raw material & energy requirements, transport of raw materials and manufacture of the product was collected by the company for the year 2022-23.

**Database(s) and LCA software used:** For calculation of environmental impacts, the method EPD (2018) Version 1.04 in SimaPro 9.5.0.1 with Ecoinvent database 3.9 is used.

**System diagram:** Figure 2 presents the system diagram. The analysis considers upstream and core processes as per PCR. This is in accordance with the corresponding PCR. Figure 1 presents the product making diagram.

### Description of system boundaries:

Following the PCR for steel products, and as previously mentioned in the system diagram, the scope of the study is “Cradle to Gate” This includes upstream and core processes as mandatory processes as per PCR.

**Upstream Process:** It includes the extraction of raw material with transportation and transportation of raw materials to the manufacturing facility.

**Core Process:** It includes the overall production processes involved in the manufacturing of Stainless-Steel Cast & Rolled Products with different type of resources and fuel consumption.

**Excluded lifecycle stages:** According to the PCR, the following rule apply.

- Exclusion in Upstream Process
  - Packaging of raw materials used for the manufacturing of steel, as considered not relevant.
- Exclusion in Core Process
  - Manufacturing of production equipment, buildings, and other capital goods.



- Business travel of personnel.
- Travel to and from work by personnel.
- Research and development activities, including the production and manufacture of laboratory equipment.
- Packaging of the manufactured steel product, as considered not relevant.
- Exclusion Downstream Process
  - The use *stage of the* product is excluded.
  - *Transportation of finished products*
  - End of life of product

#### Allocation:

All the products considered under this study have the same process used for their production and have the same inputs and outputs. In the blast furnace stage, slag is produced which is reused in the organization itself. Therefore, no allocation was used in this study.

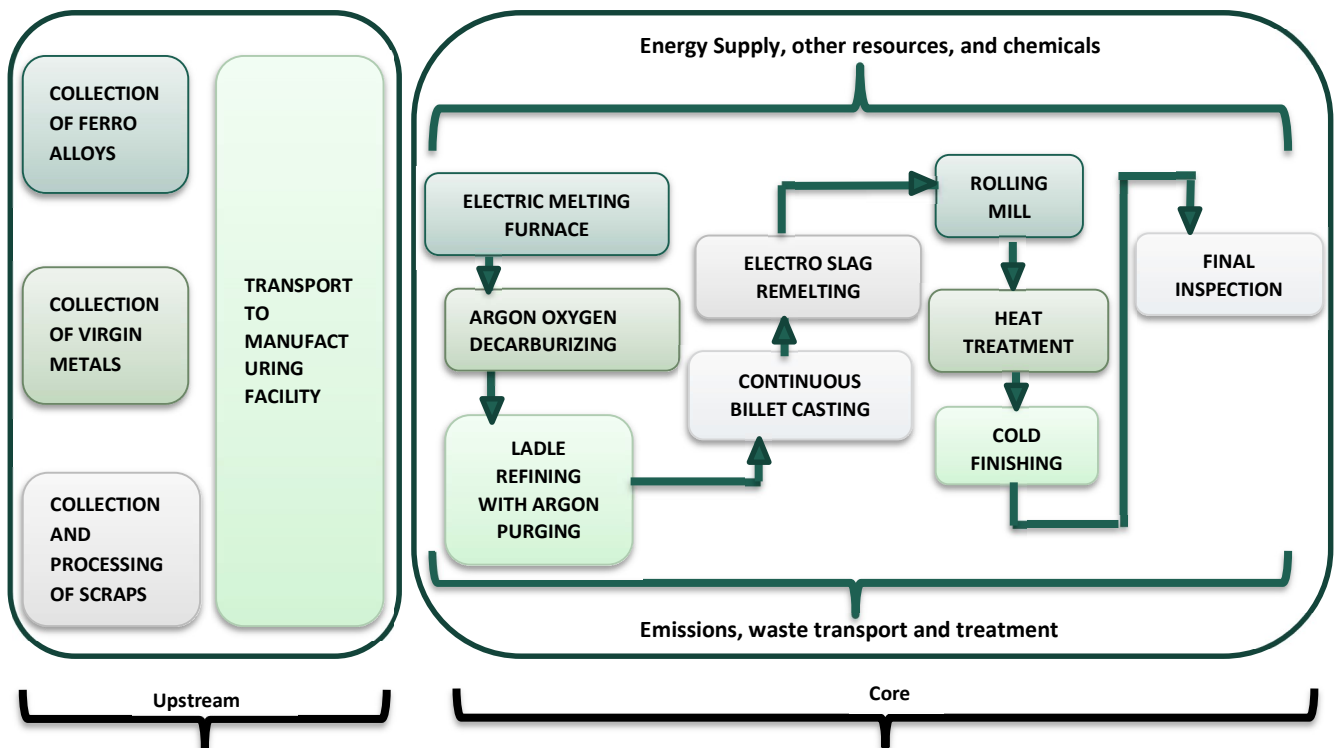


Figure 2 System Diagram considered in study

## Environmental Performance

This section presents the potential environmental impacts and use of resources of 1 tonne of Laxcon Stainless Steel Cast & Rolled Products.

### Potential environmental impact

On an average, the upstream process presents the highest impact contribution to most environmental impact categories. Due to use of burnt lime as one of the virgin raw material maximum in quantity used in the production of Stainless-Steel Cast & Rolled Products contributing to the high impacts from the upstream processes.

However, the main raw material in upstream processes i.e., steel scrap, which contributes to 95% of total of raw material used in the production of Stainless-Steel Cast & Rolled Products. Due to the use of steel scrap as raw material, there is a significant avoidance of emissions, that would have resulted otherwise using virgin material. Further, as the study is only cradle-to-gate, hence avoidance of emissions is not considered in the study.

Table 2 Potential environmental impact for 1 tonne of Stainless Steel Cast & Rolled Products

| Impact category                                    |                     | Unit                      | Total    | Upstream | Core     |
|----------------------------------------------------|---------------------|---------------------------|----------|----------|----------|
| Global Warming Potential                           | Fossil              | kg CO <sub>2</sub> -eq    | 2.01E+03 | 1.43E+02 | 1.86E+03 |
|                                                    | Biogenic            | kg CO <sub>2</sub> -eq    | 1.50E+00 | 7.51E-01 | 7.46E-01 |
|                                                    | Land transformation | kg CO <sub>2</sub> -eq    | 4.21E+00 | 1.92E-01 | 4.02E+00 |
|                                                    | Total               | kg CO <sub>2</sub> -eq    | 2.01E+03 | 1.44E+02 | 1.87E+03 |
| Acidification Potential                            |                     | kg SO <sub>2</sub> eq     | 1.30E+01 | 4.20E+00 | 8.81E+00 |
| Eutrophication Potential                           |                     | kg PO <sub>4</sub> --- eq | 5.68E+00 | 1.56E+00 | 4.12E+00 |
| Photochemical ozone creation potential (POCP)      |                     | kg NMVOC                  | 8.48E+00 | 3.05E+00 | 5.43E+00 |
| Abiotic Depletion Potential (Non-fossil resources) |                     | kg Sb eq                  | 1.38E-01 | 1.37E-01 | 9.85E-04 |
| Abiotic Depletion Potential (Fossil Resources)     |                     | MJ                        | 2.71E+04 | 5.12E+03 | 2.20E+04 |
| Water Deprivation Potential (WDP)                  |                     | m <sup>3</sup> eq         | 5.23E+02 | 2.00E+02 | 3.23E+02 |
| Ozone depletion Potential (ODP)                    |                     | kg CFC-11 eq              | 3.23E-05 | 1.37E-05 | 1.86E-05 |

### Use of resources

Table 3 Use of Resources for 1 tonne of Stainless Steel Cast & Rolled Products

| Parameter                            |                       | Unit                    | Total    | Upstream | Core     |
|--------------------------------------|-----------------------|-------------------------|----------|----------|----------|
| Primary energy resources – Renewable | Use as energy carrier | MJ, net calorific value | 9.30E+02 | 3.13E+02 | 6.18E+02 |
|                                      | Used as raw materials | MJ, net calorific value | 2.51E+02 | 5.25E+01 | 1.99E+02 |
|                                      | Total                 | MJ, net calorific value | 1.18E+03 | 3.65E+02 | 8.16E+02 |
| Primary energy resources – Non-      | Use as energy carrier | MJ, net calorific value | 2.67E+04 | 3.18E+03 | 2.35E+04 |

|                                      |                       |                         |          |          |          |
|--------------------------------------|-----------------------|-------------------------|----------|----------|----------|
| <b>renewable</b>                     | Used as raw materials | MJ, net calorific value | 9.73E+02 | 1.71E+02 | 8.02E+02 |
|                                      | Total                 | MJ, net calorific value | 2.77E+04 | 3.35E+03 | 2.43E+04 |
| <b>Secondary material</b>            |                       | kg                      | 7.13E+02 | 7.13E+02 | 7.13E+02 |
| <b>Renewable secondary fuels</b>     |                       | MJ, net calorific value | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| <b>Non-renewable secondary fuels</b> |                       | MJ, net calorific value | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| <b>Net use of fresh water</b>        |                       | m3                      | 1.47E+01 | 1.20E+01 | 2.32E+00 |

## Waste Production

Table 4 Waste Production for 1 tonne of Stainless Steel Cast & Rolled Products

| Parameter                  |    | Total    | Upstream | Core     |
|----------------------------|----|----------|----------|----------|
| <b>Hazardous waste</b>     | kg | 7.76E-02 | 3.23E-02 | 4.53E-02 |
| <b>Non-Hazardous waste</b> | kg | 8.99E+02 | 1.03E+02 | 7.96E+02 |
| <b>Radioactive waste</b>   | kg | 2.43E-02 | 4.46E-03 | 1.98E-02 |

| Parameter                            | Unit | Total    | Upstream | Core     |
|--------------------------------------|------|----------|----------|----------|
| <b>Components for reuse</b>          | kg   | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| <b>Material for recycling</b>        | kg   | 3.54E+02 | 0.00E+00 | 3.54E+02 |
| <b>Materials for energy recovery</b> | kg   | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| <b>Exported energy, electricity</b>  | MJ   | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| <b>Exported energy, thermal</b>      | MJ   | 0.00E+00 | 0.00E+00 | 0.00E+00 |

## References

- GPI: General programme instructions of the international EPD® system (v.4.0)
- PCR 2015:03 Basic iron or steel products, except construction products (CPC 4112) v2.0 (2020-03-27)
- ISO 14040: Environmental management – Life cycle assessment – Principles and framework (2006)
- ISO 14044: Environmental management – Life cycle assessment – Requirements and guidelines (2006)
- ISO 14025:2006: Environmental labels and declarations -- Type III environmental declarations – Principles and procedures.

