

# ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021

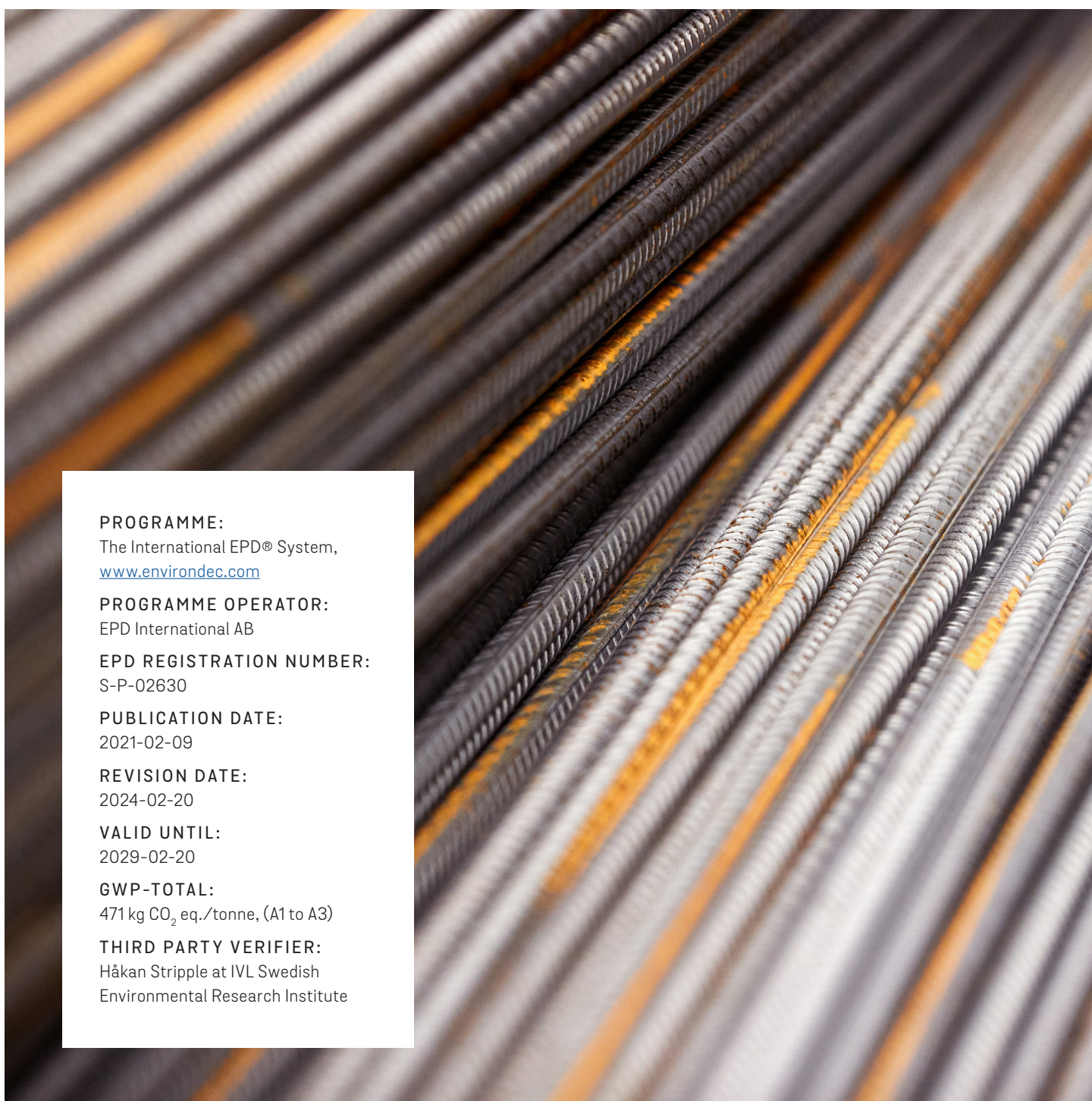


An EPD should provide current information and may be updated if conditions change.

The stated validity is therefore subject to the continued registration and publication at [www.environdec.com](http://www.environdec.com).



## STEEL REINFORCEMENT BAR STENA STÅL AB



**PROGRAMME:**

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

**PROGRAMME OPERATOR:**

EPD International AB

**EPD REGISTRATION NUMBER:**

S-P-02630

**PUBLICATION DATE:**

2021-02-09

**REVISION DATE:**

2024-02-20

**VALID UNTIL:**

2029-02-20


**GWP-TOTAL:**

471 kg CO<sub>2</sub> eq./tonne, (A1 to A3)

**THIRD PARTY VERIFIER:**

Håkan Stripple at IVL Swedish  
Environmental Research Institute

## PROGRAMME INFORMATION

|   |   |  |
|---|---|--|
| <b>Programme:</b>   | The International EPD® System   |  |
|   | EPD International AB<br>Box 210 60<br>SE-100 31 Stockholm<br>Sweden   |  |
|   | www.environdec.com<br>info@environdec.com   |  |
| <b>CEN STANDARD EN 15804 SERVES AS THE CORE PRODUCT CATEGORY RULES (PCR)</b>                          |   |  |
| <b>Product category rules (PCR):</b>  | PCR 2019:14 Construction products (EN 15804:A2), version 1.3.1  |  |
| <b>PCR review was conducted by:</b>   | The Technical Committee of the International EPD® System. A full list of members available on www.environdec.com. The review panel may be contacted via info@environdec.com |  |
| <b>Independent third-party verification of the declaration and data, according to ISO 14025:2006:</b> | <input checked="" type="checkbox"/> EPD verification by individual verifier   |  |
| <b>Third-party verifier:</b>  | Håkan Stripple, IVL Swedish Environmental Research Institute<br>P.O. Box 53021, SE-400 14 Gothenburg, Sweden<br>hakan.strippl@ivl.se, www.ivl.se                            |  |
|   |   |  |
| <b>Approved by:</b>   | The International EPD® System   |  |
| <b>Procedure for follow-up of data during EPD validity involves third party verifier:</b>             | <input type="checkbox"/> Yes  | <input checked="" type="checkbox"/> No |

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

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.





## COMPANY INFORMATION

Stena Stål supplies a wide range of steel products to customers in Sweden and Norway. Through close collaborations with leading steel producers, products including Beams, Merchant bars, Tubes/Hollow sections, Reinforcement steel, Strip products and heavy plates, Stainless steel, Aluminium and special steels are offered. Its customers mainly consist of small and medium-sized companies in the construction and industrial sectors.

As a complement to its wholesale business, Stena Stål offers the adaptation and pre-treatment of steel products, based on customer-specific needs, either in-house or in collaboration with its partners. Among other services, cutting, abrasive blasting and painting is also offered.

Stena Stål has operations in 15 locations in Sweden and in Moss, Norway, comprising warehouse, production and sales. Stena Stål is a part of the Stena Metall Group.

Stena Stål's organization maintain ISO 9001, ISO 14001, ISO 45001 SS-EN1090 and SBS certificates. Stena Stål also provides a number of product certificates and declarations to ensure fulfilment with applicable regulations and standards, for more information:

<https://www.stenastal.se/hallbarhet/>

Product-related or management system-related certifications:  
ISO 9001, ISO 14001, ISO 45001, SS-EN1090 and SBS certificates.

Name and location of the warehouse operations:  
Sweden: Västerås, Lidköping, Helsingborg, Jönköping, Luleå, Skellefteå, Kalmar, Gothenburg, Timrå, and Örnsköldsvik  
Norway: Moss.

Owner of the EPD: Stena Stål AB

Contact: Jacob Hedin: jacob.hedin@stenastal.se

### PRODUCT INFORMATION

Product name: Steel reinforcement bar.

Product description: Reinforcement steel bars for use in concrete constructions in order to increase the strength of the material.

UN CPC code: 41241 and 41242.

Geographical scope: Both the production and market are located in Sweden.

## LCA INFORMATION

**Declared unit:** 1 metric tonne (1000kg) of Steel reinforcement bars.

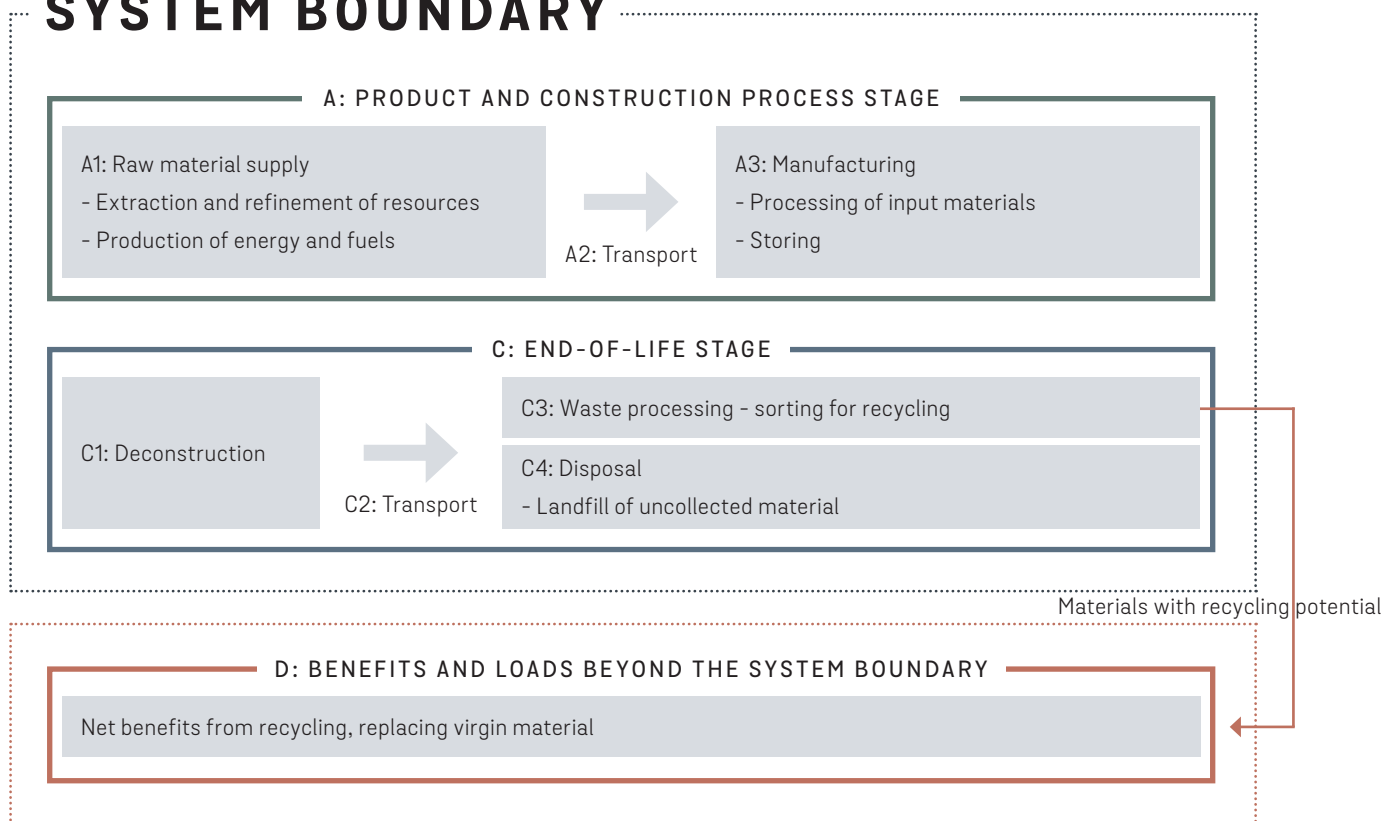
**Time representativeness:** The data represents the period between September 1, 2021 and August 31, 2022.

**Database(s) and LCA software used:** LCA calculations were performed with the LCA software LCA for Experts (version 10.71.28), using life cycle inventory (LCI) data from Professional database and Ecoinvent 3.9.

**Description of system boundaries:** Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D) and thus covers modules A1-A3, C1-C4, and D. The life cycle stages A4-A5 and B1-B7 are not included.

**System diagram:** The figure below presents a simplified process tree with system boundaries where all instances of the figure are included in the assessment. Excluded are thus, e.g., inventory flows from infrastructure, construction, production equipment, and tools that are not directly consumed in the production process, travelling by personnel and research and development – all in accordance with the PCR 2019:14 and EN 15804. For further details on what is included in each module (e.g., inputs, outputs, and assumptions), see sections following the process tree.

## SYSTEM BOUNDARY



**Product stage, A1-A3:** The product stage comprises the acquisition of all raw materials, products and energy, transport to the production site, production processes, packaging, and waste processing up to the end-of-waste state or final disposal.

More specifically, this module includes the upstream processes of extraction and processing of raw materials and their packaging and the transportation of the input materials, excluding packaging, to the production sites. Furthermore, it includes the core processes in sites of storing and processing of the final product, including the end-of-life treatment of waste generated from the packaging, as well as impacts from extraction and processing of fuels used, and their transportation to the production site. The module also includes the production of purchased electricity, diesel, gas and HVO used at the production site. The electricity is a certified mix of hydro power, wind, solar, and biomass. The GWP-GHG impact of the electricity is 0.017 kg CO<sub>2</sub> eq./kWh.

Transport to customer, A4: Transport distances to customers have been estimated by Stena Stål.

End-of-life, C1-C4: The main market for Stena Stål's products is in Sweden. Therefore, the end-of-life treatment of the Steel reinforcement bars is modelled for Swedish conditions. According to SCB (2020), over 99% of steel is recycled in Sweden. 95% will be assumed to reach recycling for this project with the remaining 5% going to landfill to account for materials not being fit for recycling.

**END-OF-LIFE**

| Scenario information              | Unit                          | Quantity |
|-----------------------------------|-------------------------------|----------|
| Collection specified by type      | kg collected separately       | 1000     |
|                                   | kg collected with mixed waste | 0        |
| Recovery system specified by type | kg for re-use                 | 0        |
|                                   | kg for recycling              | 950      |
|                                   | kg for energy recovery        | 0        |
| Landfill                          | kg for final deposition       | 50       |
| Assumptions for transportation    | km                            | 100      |

Re-use, recovery and recycling potential, D: Module D includes reuse, recovery and/or recycling potential, expressed as net impact and benefits. In this case, it is assumed that module D includes the potential benefits from avoided production of steel through recycling of the net (virgin) share of materials in the product lifecycle. Furthermore, 10% losses associated with the remelting of the metal are assumed to occur outside of the system boundaries.

Cut-off rules: General cut-off criteria as defined in EN15804 are followed. Life cycle inventory data shall according to EN 15804 include a minimum of 95% of total inflows (mass and energy) per module.

Data quality: All processes with a significant impact have high quality datasets.

Allocation: All sites relevant have provided site specific data for the different products for storing and processing for the period 2021-09-01 and 2022-08-31. Most sites produce multiple products, both the products included in the study and ones outside of it. Total quantities used on the sites has been allocated to the products by dividing the amount of the product in question with the total amount of all products produced at the site.

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

|                      | 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             | ND                         | ND                        | ND        | ND          | ND     | ND          | ND            | ND                     | ND                    | X                          | X         | X                | X                       | X                                  |
| Geography            | NO                  | NO, SE    | SE            | -                          | -                         | -         | -           | -      | -           | -             | -                      | -                     | SE                         | SE        | SE               | SE                      | SE                                 |
| Specific data used   | 97%                 |           |               | -                          | -                         | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -                       | -                                  |
| Variation - products | 0%                  |           |               | -                          | -                         | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -                       | -                                  |
| Variation - sites    | +/- 19%             |           |               | -                          | -                         | -         | -           | -      | -           | -             | -                      | -                     | -                          | -         | -                | -                       | -                                  |

## CONTENT INFORMATION

| Product components  | Weight, kg | Post-consumer material, weight-% | Biogenic material, weight-% and kg C/kg |
|---------------------|------------|----------------------------------|---|
| Steel               | 1000       | 73%                              | 0%, 0kg                                 |
| Packaging materials | Weight, kg | Weight-% (versus the product)    | Weight biogenic carbon, kg C/kg         |
| Polyester strap     | 2          | 0.2%                             | 0                                       |
| Cardboard box       | 0.044      | 0.0044%                          | 0.43                                    |
| TOTAL               | 2.044      | 0.2044%                          |   |

The product does not, independent of site, contain any of the substances listed on the "Candidate List of Substances of Very High Concern (SVHC) for authorisation" ([http://echa.europa.eu/chem\\_data/authorisation\\_process/candidate\\_list\\_table\\_en.asp](http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp)).

## RESULTS OF THE ENVIRONMENTAL PERFORMANCE INDICATORS

MANDATORY IMPACT CATEGORY INDICATORS ACCORDING TO EN 15804

| Results per 1 metric tonne |   |          |          |          |          |          |          |           |
|----------------------------|---|----------|----------|----------|----------|----------|----------|-----------|
| Indicator                  | Unit  | A1-A3    | A4       | C1       | C2       | C3       | C4       | D         |
| GWP-total                  | kg CO <sub>2</sub> eq.  | 4.71E+02 | 1.16E+01 | 0.00E+00 | 8.68E+00 | 5.47E+01 | 2.64E-01 | -1.55E+02 |
| GWP-fossil                 | kg CO <sub>2</sub> eq.  | 4.46E+02 | 1.15E+01 | 0.00E+00 | 8.58E+00 | 5.47E+01 | 2.63E-01 | -1.55E+02 |
| GWP-biogenic               | kg CO <sub>2</sub> eq.  | 2.54E+01 | 3.41E-02 | 0.00E+00 | 2.53E-02 | 2.05E-02 | 2.86E-04 | 4.22E-01  |
| GWP-LULUC                  | kg CO <sub>2</sub> eq.  | 7.34E-01 | 1.07E-01 | 0.00E+00 | 7.93E-02 | 5.78E-03 | 2.54E-04 | -6.66E-02 |
| ODP                        | kg CFC11 eq.  | 3.24E-05 | 1.50E-12 | 0.00E+00 | 1.11E-12 | 1.17E-05 | 1.07E-07 | 6.41E-10  |
| AP                         | mol H <sup>+</sup> eq.  | 2.30E+00 | 1.64E-02 | 0.00E+00 | 3.35E-02 | 5.68E-01 | 2.48E-03 | -3.47E-01 |
| EP-fresh-water             | kg P eq.  | 7.98E-03 | 4.22E-05 | 0.00E+00 | 3.13E-05 | 1.69E-03 | 2.41E-05 | 2.38E-05  |
| EP-marine                  | kg N eq.  | 1.04E+00 | 5.84E-03 | 0.00E+00 | 1.56E-02 | 2.52E-01 | 8.62E-04 | -8.28E-02 |
| EP-terrestrial             | mol N eq.   | 1.13E+01 | 6.94E-02 | 0.00E+00 | 1.74E-01 | 2.76E+00 | 9.42E-03 | -8.97E-01 |
| POCP                       | kg NMVOC eq.  | 2.71E+00 | 1.43E-02 | 0.00E+00 | 3.02E-02 | 7.58E-01 | 2.74E-03 | -2.73E-01 |
| ADP-minerals & metals*     | kg Sb eq.   | 1.79E-04 | 7.60E-07 | 0.00E+00 | 5.64E-07 | 2.81E-05 | 6.01E-07 | -1.25E-07 |
| ADP-fossil                 | MJ  | 4.27E+03 | 1.57E+02 | 0.00E+00 | 1.17E+02 | 7.47E+02 | 7.38E+00 | -1.10E+03 |
| WDP                        | m <sup>3</sup>  | 1.08E+02 | 1.40E-01 | 0.00E+00 | 1.03E-01 | 1.84E+00 | 3.39E-01 | -2.27E+00 |
| Acronyms                   | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption |          |          |          |          |          |          |           |

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

ADDITIONAL MANDATORY AND VOLUNTARY IMPACT CATEGORY INDICATORS

| Results per 1 metric tonne |                        |          |          |          |          |          |          |           |
|----------------------------|------------------------|----------|----------|----------|----------|----------|----------|-----------|
| Indicator                  | Unit                   | A1-A3    | A4       | C1       | C2       | C3       | C4       | D         |
| GWP-GHG*                   | kg CO <sub>2</sub> eq. | 4.46E+02 | 1.15E+01 | 0.00E+00 | 8.61E+00 | 5.47E+01 | 2.63E-01 | -1.55E+02 |

\*This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO<sub>2</sub> is set to zero.



## RESOURCE USE INDICATORS

| Results per 1 metric tonne |   |          |          |          |          |          |          |           |
|----------------------------|---|----------|----------|----------|----------|----------|----------|-----------|
| Parameter                  | Unit  | A1-A3    | A4       | C1       | C2       | C3       | C4       | D         |
| PERE                       | MJ  | 4.37E+03 | 1.14E+01 | 0.00E+00 | 8.48E+00 | 4.23E+00 | 6.40E-02 | 2.80E+02  |
| PERM                       | MJ  | 1.18E+01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00  |
| PERT                       | MJ  | 4.38E+03 | 1.14E+01 | 0.00E+00 | 8.48E+00 | 4.23E+00 | 6.40E-02 | 2.80E+02  |
| PENRE                      | MJ  | 4.28E+03 | 1.57E+02 | 0.00E+00 | 1.17E+02 | 7.47E+02 | 7.38E+00 | -1.11E+03 |
| PENRM                      | MJ  | 1.50E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00  |
| PENRT                      | MJ  | 4.28E+03 | 1.57E+02 | 0.00E+00 | 1.17E+02 | 7.47E+02 | 7.39E+00 | -1.11E+03 |
| SM                         | kg  | 1.13E+03 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00  |
| RSF                        | MJ  | 5.51E+01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00  |
| NRSF                       | MJ  | 6.61E+02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00  |
| FW                         | m <sup>3</sup>  | 5.06E+01 | 1.25E-02 | 0.00E+00 | 9.29E-03 | 4.28E-02 | 7.88E-03 | -6.69E-02 |
| Acronyms                   | PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy 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 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 |          |          |          |          |          |          |           |

## WASTE INDICATORS

| Results per 1 metric tonne   |      |          |          |          |          |          |          |           |
|------------------------------|------|----------|----------|----------|----------|----------|----------|-----------|
| Parameter                    | Unit | A1-A3    | A4       | C1       | C2       | C3       | C4       | D         |
| Hazardous waste disposed     | kg   | 2.10E-01 | 4.87E-10 | 0.00E+00 | 3.62E-10 | 0.00E+00 | 0.00E+00 | -1.65E-08 |
| Non-hazardous waste disposed | kg   | 2.32E+02 | 2.40E-02 | 0.00E+00 | 1.78E-02 | 0.00E+00 | 5.00E+01 | -2.43E+00 |
| Radioactive waste disposed   | kg   | 1.95E-01 | 2.94E-04 | 0.00E+00 | 2.19E-04 | 0.00E+00 | 0.00E+00 | 2.97E-02  |

## OUTPUT FLOW INDICATORS

| Results per 1 metric tonne    |      |          |          |          |          |          |          |          |
|-------------------------------|------|----------|----------|----------|----------|----------|----------|----------|
| Parameter                     | Unit | A1-A3    | A4       | C1       | C2       | C3       | C4       | D        |
| Components for re-use         | kg   | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Material for recycling        | kg   | 1.82E+02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 9.50E+02 | 0.00E+00 | 0.00E+00 |
| Materials for energy recovery | kg   | 1.10E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Exported energy, electricity  | MJ   | 6.67E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Exported energy, thermal      | MJ   | 1.20E+01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

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### CONTACT INFORMATION:

**EPD OWNER:**

Stena Stål AB  
Box 4088, 400 40 Göteborg, Sweden  
Telephone: +46 (0) 10 445 00 00

Jacob Hedin,  
[jacob.hedin@stenastal.se](mailto:jacob.hedin@stenastal.se)

**LCA/EPD AUTHOR:**

Ramboll Sweden AB  
Box 5343, Vädursgatan 6,  
402 27 Göteborg, Sweden

Niclas Silfverstrand,  
[niclas.silfverstrand@ramboll.se](mailto:niclas.silfverstrand@ramboll.se)

Thomas Eknor Morrell,  
[thomas.morrell@ramboll.se](mailto:thomas.morrell@ramboll.se)

**PROGRAMME OPERATOR:**

EPD International AB  
[info@environdec.com](mailto:info@environdec.com)