OVAKO

Environmental product declaration

In accordance with ISO 14025 for:

Hot rolled bar from Ovako Smedjebacken

The International EPD® System environdec.com
Program operator: EPD International AB
EPD registration number: EPD-IES-0032413:001
Version date: 2026-05-12
Validity date: 2031-05-12

EPD
INTERNATIONAL EPD SYSTEM

Information about the EPD owner

Owner of the EPD:
Ovako Bar AB
SE-777 80 Smedjebacken
Sweden

Contact
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Product-related or management system-related certifications
Certified compliance with ISO 9001, ISO 14001, ISO 45001, ISO 50001 and IATF 16949-certificates

Name and location of production site:
Smedjebacken, Sweden

Description of the organization
At Ovako, we produce clean, high-quality engineering steel made from 97% recycled material and fossil-free energy. Our products enable lighter, stronger, and more resource-efficient solutions for the bearing, transport, and manufacturing industries. As part of Sanyo Special Steel and the Nippon Steel Corporation, we are committed to our purpose: - Together we create steel for a decarbonized society. Smedjebacken has produced steel since 1631 and operates today a steel mill and a medium section rolling mill. Around half of the site's steel is rolled locally, while the rest is processed in Boxholm as part of the SmeBox business unit – Ovako's broadest product area. SmeBox serves customers across multiple sectors and produces wear resistant grades, spring steel, and micro alloyed steel, including Ovako's only flat steel. Smedjebacken continues to invest in sustainability, supported by fossil free energy use and upgraded filtration systems designed to reduce environmental impact

Product Information

Product Name
Hot rolled bar

Product Identification
The product is made from Low Alloyed Steels. The steel is in the massive product forms; semi-finished bar products.

UN CPC code
412

Product Description
Hot-rolled bar, dimension 62 mm, steel grade 19MnVS, standard EN10267.

As can be seen in Figure 1, the main inputs to the steel making are scrap, alloys, coal, lime, fuels, oxygen and inbound transportation. Scrap is melted in the electric arc furnace, alloyed in the ladle furnace and casted to billets. The billets are reheated and rolled in the rolling mill and further processed according to the customer specification. Major additional processes include waste and slag handling and treatment of emissions to water and air.

LCA Information

Declared unit
1 tonne (1000 kg) of steel product without distribution packaging.

Reference service life
Not applicable.

Time representativeness
Production data and Electricity mix data are from 2024

Geograpical Scope
A1-A2: Global, A3: SE

Database(s) and LCA software used
Ecoinvent 3.11 as applied in SimaPro 10.3.0.1, 2026. For calculation of environmental impacts, the method 15804 reference package using Environmental Footprint (EF) version 3.1 in SimaPro was used

EPD tool used
Ovako's pre-verified EPD-tool v1.0.

Description of system boundaries
Cradle-to-gate, see Figure 1. The impact from auxiliary materials, such as lime and refractories, are included in module A3 even though Ovako is not the producer of these materials, in accordance with the Product Category Rules (PCR). The same applies to gases, such as argon and nitrogen. The modelling of infrastructure/capital goods are furthermore not included in the system boundaries.

Cut-off criteria
The LCA includes all environmentally relevant processes from cradle-to-gate, covering at least 95% of the total energy and material use, and environmental impact per module. Distribution packaging and minor waste streams are excluded based on the cut-off criteria stipulated in the PCR.

Allocation
No allocation to co-products such as slags and mill scales have been conducted, i.e. the steel product carries the full environmental burden. Allocation of waste follows the polluter-pays principle, in accordance with the PCR.

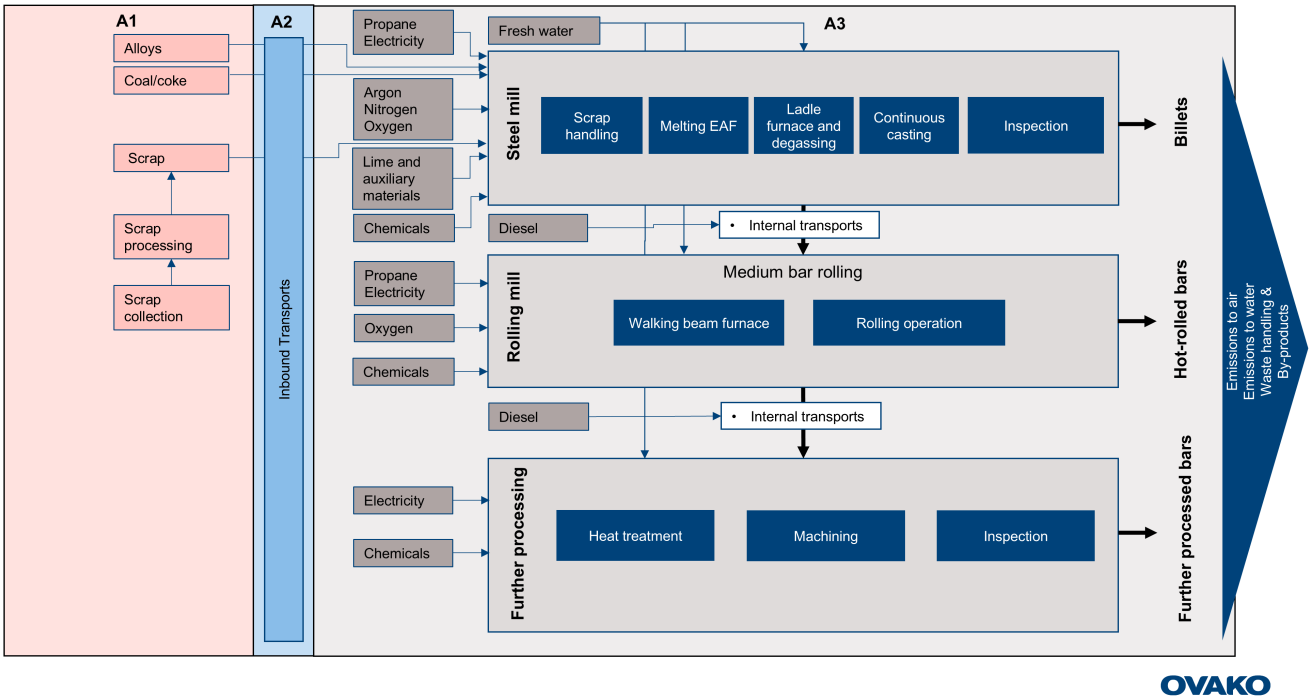

Figure 1. System boundaries for Ovako Smedjebacken's engineering steel products. Please use this figure alongside the product description to identify the system boundaries for this EPD. Auxiliary materials (e.g. lime and refractories) and gases are included in module A3 even though Ovako is not the producer of these materials, in accordance with the PCR.

Data quality assessment

The geographical, technical, and temporal representativeness of the data has been assessed using the data quality levels and criteria defined in the UN Environment Global Guidance on LCA Database Development. The datasets identified as significant contributors to the results primarily include direct emissions, energy use, alloys, and certain auxiliary materials. Overall, most datasets show fair to very good geographical representativeness, good technical representativeness, and very good temporal representativeness.

The following table provides a summary of the data quality assessment (DQA) for the most contributing processes and the share of primary data in the used data. The DQA was done according to EN 15804:2012+A2:2019, Annex E.2. Background data was sourced from the Ecoinvent 3.11 database. All A3 data is catagorized as Primary data since the activity data is primary (while the background data to represent the process or material often is secondary data). In the calculation of the share of primary data, only energy, transports, and direct emissions are counted as primary when combined with primary activity data.

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Fuels and direct emissions from processing (A3)	Database	ecoinvent 3.11	2025	Primary data	31.9%
Fuels and direct emissions from processing (A3)	Collected data	EPD owner	2024	Primary data	12.5%
Other A3	Database	ecoinvent 3.11	2025	Primary data	2.6%
Other A3	Database	ecoinvent 3.11	2024	Primary data	0.9%
Other A3	EPD	Supplier	2026	Primary data	0.5%
Other A3	Collected data	EPD owner	2024	Primary data	0.0%
Total share of primary data, of GWP_GHG results for A1-A3					**48.5%**

Additional information

Ovako Smedjebacken is using 100 % fossil-free electricity (hydro and nuclear power) in its production. The GWP-GHG indicator is 0,0081 kg CO2 eq./kWh for the modelled electricity, including distribution losses.

Content declaration

Product content	Mass [kg/tonne]	%
FE	970	97
Mn	15	1.5
Si	3	0.3
Other materials*	9.9	0.99

*Other materials refer to materials that each contribute less than 0,25% of the product content.

Standards describing the methods used for chemical composition analysis are: ASTM E 415-17 and ASTM E 1019-18.

Steel products are considered as articles under the European Regulation (EC) 1907/2006, concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH). None of the intentionally added alloying elements in Ovako products are classified as hazardous with the exception of nickel. Nevertheless, there are certain substances covered by European and national chemical legislation and lists (REACH Annex XIV and XVII, RoHS-directive (2011/65/EC) Annex II and Global Automotive Declarable Substance List (“GADSL”)) that cannot physically be measured in steel and others that are difficult to measure due to being present in very low levels. The alloying elements in low alloyed steel are firmly bonded in its chemical matrix. Due to this bonding and to the presence of a protective oxide film the release of any of the constituents is very low and negligible when the steel is used appropriately. Furthermore, the steel products do not contain any biogenic carbon.

Distribution packaging
Not applicable.

Consumer packaging
Not applicable.

Recycled material
The mill has a yearly average of 31 % pre-consumer iron scrap and 68 % post-consumer iron scrap (i.e. not product specific), calculated in accordance with EN45557 and ISO14021. The remaining iron content consists of pig iron. To calculate the average recycled content of the steel product, the mill’s annual average share of pre- and post-consumer iron scrap is multiplied by the iron content.

Environmental performance

Potential environmental impact per 1000 kg Hot rolled bar

Parameter	Unit	A1	A2	A3	Total
Global warming potential (GWP)					
GWP - Fossil	kg CO2 eq.	1.20E+2	1.22E+1	3.95E+2	5.27E+2
GWP - Biogenic	kg CO2 eq.	1.15E-1	2.03E-3	5.07E+0	5.19E+0
GWP - Land use and land transformation	kg CO2 eq.	1.77E-1	6.69E-3	1.59E+0	1.77E+0
GWP - Total	kg CO2 eq.	1.21E+2	1.22E+1	4.03E+2	5.36E+2
GWP - GHG	kg CO2 eq.	1.21E+2	1.22E+1	3.98E+2	5.31E+2
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC 11 eq.	9.09E-7	1.24E-7	2.72E-6	3.75E-6
Acidification potential (AP)	mol H+ eq.	8.95E-1	1.55E-1	9.56E-1	2.01E+0
Eutrophication potential (EP),aq. freshwater	kg P eq.	5.42E-3	1.16E-4	6.60E-3	1.21E-2
Eutrophication potential (EP),aq. marine	kg N eq.	2.25E-1	3.80E-2	2.30E-1	4.93E-1
Eutrophication potential (EP),aq terrestrial	mol N eq.	2.53E+0	4.23E-1	2.48E+0	5.43E+0
Photochemical oxidant creation potential (POCP)	kg NMVOC eq.	7.67E-1	1.29E-1	9.55E-1	1.85E+0
Abiotic depletion potential Metals and minerals*	kg Sb eq.	8.11E-4	2.63E-5	5.15E-4	1.35E-3
Abiotic depletion potential Fossil resources*	MJ, net calorific value	1.73E+3	1.64E+2	1.23E+4	1.42E+4
Water deprivation potential (WDP)*	m3 world eq. deprived	6.86E+0	7.12E-1	1.91E+2	1.98E+2

*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.

Please note that the environmental performance results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

Use of resources per 1000 kg Hot rolled bar

Parameter	Unit	A1	A2	A3	Total
Primary energy resources – Renewable					
Use as energy carrier	MJ, net calorific value	2.64E+2	2.15E+0	3.15E+2	5.81E+2
Use as raw materials	MJ, net calorific value	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total	MJ, net calorific value	2.64E+2	2.15E+0	3.15E+2	5.81E+2
Primary energy resources – Non-renewable					
Use as energy carrier	MJ, net calorific value	1.84E+3	1.74E+2	1.27E+4	1.47E+4
Use as raw materials	MJ, net calorific value	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total	MJ, net calorific value	1.84E+3	1.74E+2	1.27E+4	1.47E+4

General information

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit 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 identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterization factors); and be valid at the time of comparison.

For further information about comparability, see ISO 14025.

Program
The International EPD®
System EPD
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2031-05-12

Version history
Original Version of the EPD,
2026-05-12

Product Category Rules

PCR 2015:03. BASIC IRON OR STEEL PRODUCTS & SPECIAL STEELS, EXCEPT CONSTRUCTION STEEL PRODUCTS. Version 3.0.1 PCR review was conducted by: The Technical Committee of the International EPD® System. Full list of TC members available on environdec.com/TC. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact

Third-party verification

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

Individual EPD verification with a pre-verified LCA/EPD tool Bureau Veritas Certification Sverige AB, Fabriksgatan 13, 412 50 Gothenburg Accredited by: SWEDAC, Accreditation number 1236

Pre-verified LCA tool or Pre-verified EPD tool: Ovako's pre-verified EPD-tool v1.0. Bureau Veritas Certification Sverige AB, Fabriksgatan 13, 412 50 Gothenburg Accredited by: SWEDAC, Accreditation number 1236

Approved by
The International EPD® System

Abbreviation

Abbreviations	Definition
ADP	Abiotic depletion potential
AP	Acidification potential
CEN	European Committee for Standardization
CPC	Central product classification
EF	Environmental Footprint
EN	European Norm (Standard)
EP	Eutrophication potential
EPD	Environmental Product Declaration type III
GHG	Greenhouse Gases
GPI	General Programme Instructions
GWP	Global Warming Potential
IATF	International Automotive Task Force
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
ND	Not Declared
ODP	Depletion potential of the stratospheric ozone layer
PCR	Product Category Rules
POCP	Photochemical oxidant creation potential
SVHC	Substances of Very High Concern
WDP	Water deprivation potential

Reference

Ecoinvent 3.11, as implemented 2024 in SimaPro 10.3.0.1

General Programme Instructions of the International EPD® System. Version 5.0.1.

OVAKO EPD generator TOOL PROJECT REPORT, version 1.0. April, 2026.

PCR 2015:03. BASIC IRON OR STEEL PRODUCTS & SPECIAL STEELS, EXCEPTCON STRUCTION STEEL PRODUCTS. Version 3.0.1

SimaPro 10.3.0.1. Pré Consultants.

Vattenfall, 2026. EPD Electricity from Vattenfall's Nordic Hydropower. EPD-registration number: EPD-IES-0000088:003 (S-P-00088

Vattenfall, 2022. EPD Electricity from Vattenfall's Nuclear Power Plants. EPD-registration number: EPD-IES-0000923:002 (S-P-00923)