

# ENVIRONMENTAL PRODUCT DECLARATION

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



## RE-USED POST-CONSUMER STEEL BEAMS AND STRUCTURAL HOLLOW SECTIONS FOR LOAD BEARING STRUCTURES

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-07617

**PUBLICATION DATE:**

2024-02-20

**VALID UNTIL:**

2029-02-20


**GWP-TOTAL:**

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

**THIRD PARTY VERIFIER:**

Håkan Stripplé at IVL Swedish  
Environmental Research Institute

## PROGRAMME INFORMATION

<b>Programme:</b>	The International EPD® System	
	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden  <a href="http://www.environdec.com">www.environdec.com</a> <a href="mailto:info@environdec.com">info@environdec.com</a>	
<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 <a href="http://www.environdec.com">www.environdec.com</a> . The review panel may be contacted via <a href="mailto:info@environdec.com">info@environdec.com</a>	
<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 Stripplé, IVL Swedish Environmental Research Institute P.O. Box 53021, SE-400 14 Gothenburg, Sweden <a href="mailto:hakan.stripplé@ivl.se">hakan.stripplé@ivl.se</a> , <a href="http://www.ivl.se">www.ivl.se</a>  	
<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:  
Jönköping, Sweden

Owner of the EPD: Stena Stål AB

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

### PRODUCT INFORMATION

Product name: Post-consumer steel beams and structural hollow sections for load-bearing structures.

Product description: Material Standards: MVR B04:2021 and meets the requirements of EN1090.

Reused beam- and structural hollow sections such as HEA, HEB, UNP, VKR/ KKR etc. Post-consumer steel beams and structural hollow sections for load-bearing structures are reused products, which have been tested by third party. The dimensional tolerances of the products follow the regular range. Steel grades varies from S235-S355. The products are 100% recyclable.

Beams are used for load bearing-structures in buildings. Hollow profiles are used as a complement to beam profiles in building construction.

UN CPC code: 4125 and 4126.

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

## LCA INFORMATION

**Declared unit:** 1 metric tonne (1000 kg) of Post-consumer steel beams and structural hollow sections.

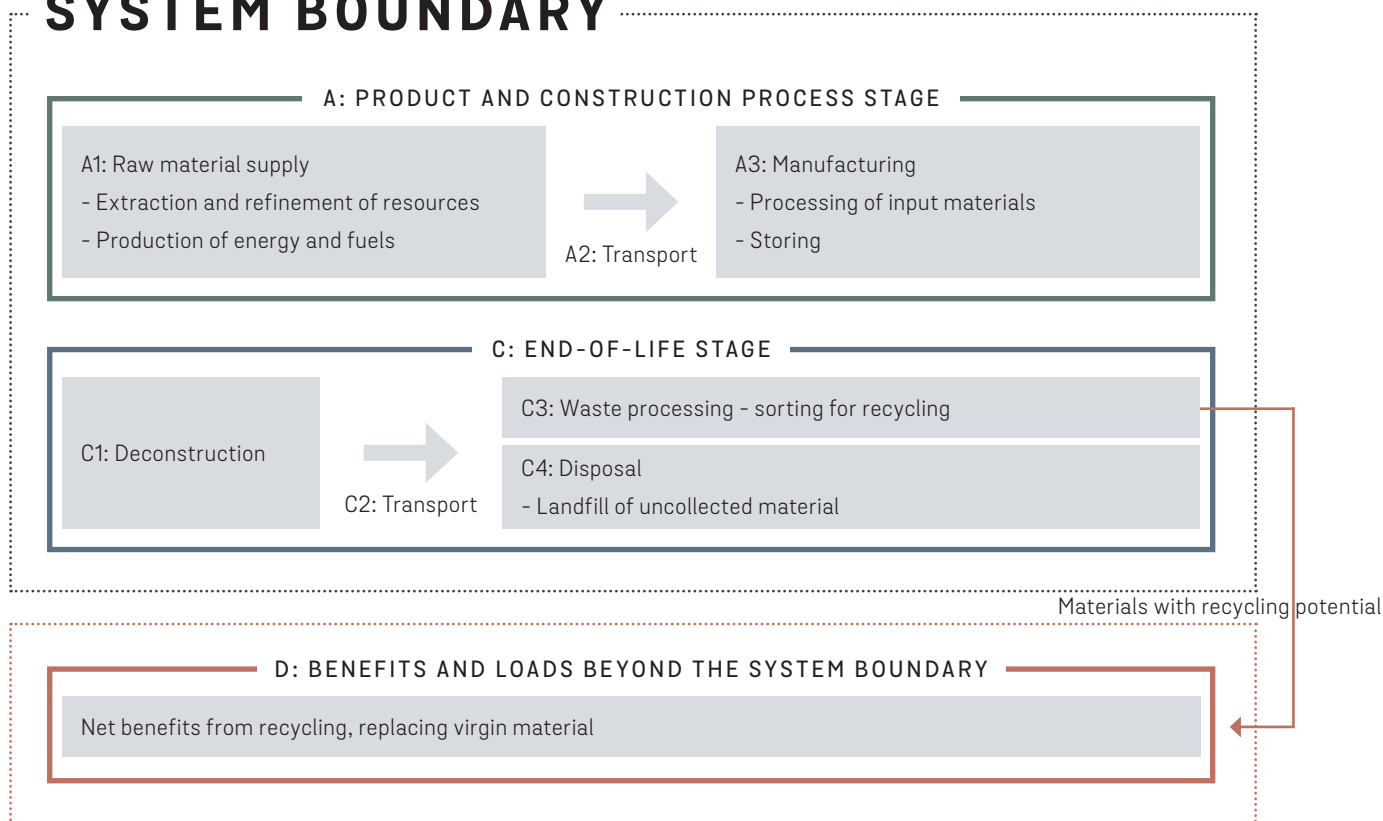
**Time representativeness:** The data represents the period between September 1, 2021 and August 31, 2022.

**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 post-consumer beams, 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 transporting and testing post-consumer beams and production of packaging. Furthermore, it includes the core processes on site 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 the Stena Stål's products is in Sweden. Therefore, the end-of-life treatment of the Post-consumer steel beams and structural hollow sections are 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, no benefits have been modelled in module D as the product contains 100% post-consumer material (which is subtracted from the net benefit in module D).

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 us	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	SE	SE	SE	-	-	-	-	-	-	-	-	-	SE	SE	SE	SE	SE
Specific data used	73%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

## CONTENT INFORMATION

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Steel	1000	100%	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.	5.32E+01	1.16E+01	0.00E+00	8.68E+00	5.47E+01	2.64E-01	0.00E+00
GWP-fossil	kg CO <sub>2</sub> eq.	5.27E+01	1.15E+01	0.00E+00	8.58E+00	5.47E+01	2.63E-01	0.00E+00
GWP-biogenic	kg CO <sub>2</sub> eq.	1.96E-01	3.41E-02	0.00E+00	2.53E-02	2.05E-02	2.86E-04	0.00E+00
GWP-LULUC	kg CO <sub>2</sub> eq.	3.37E-01	1.07E-01	0.00E+00	7.93E-02	5.78E-03	2.54E-04	0.00E+00
ODP	kg CFC11 eq.	3.06E-05	1.50E-12	0.00E+00	1.11E-12	1.17E-05	1.07E-07	0.00E+00
AP	mol H <sup>+</sup> eq.	2.21E-01	1.64E-02	0.00E+00	3.35E-02	5.68E-01	2.48E-03	0.00E+00
EP-freshwater	kg P eq.	2.92E-03	4.22E-05	0.00E+00	3.13E-05	1.69E-03	2.41E-05	0.00E+00
EP-marine	kg N eq.	9.01E-02	5.84E-03	0.00E+00	1.56E-02	2.52E-01	8.62E-04	0.00E+00
EP-terrestrial	mol N eq.	9.16E-01	6.94E-02	0.00E+00	1.74E-01	2.76E+00	9.42E-03	0.00E+00
POCP	kg NMVOC eq.	2.08E-01	1.43E-02	0.00E+00	3.02E-02	7.58E-01	2.74E-03	0.00E+00
ADP-minerals & metals*	kg Sb eq.	6.29E-05	7.60E-07	0.00E+00	5.64E-07	2.81E-05	6.01E-07	0.00E+00
ADP-fossil	MJ	6.96E+02	1.57E+02	0.00E+00	1.17E+02	7.47E+02	7.38E+00	0.00E+00
WDP	m <sup>3</sup>	1.09E+01	1.40E-01	0.00E+00	1.03E-01	1.84E+00	3.39E-01	0.00E+00
Acronyms	<p>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&amp;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</p>							

\* 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.	5.29E+01	1.15E+01	0.00E+00	8.61E+00	5.47E+01	2.63E-01	0.00E+00

\*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
RPEE	MJ	6.98E+02	1.56E+02	0.00E+00	1.17E+02	7.47E+02	7.38E+00	0.00E+00
RPEM	MJ	0.00E+00	1.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TPE	MJ	6.98E+02	1.57E+02	0.00E+00	1.17E+02	7.47E+02	7.38E+00	0.00E+00
NRPE	MJ	6.54E+02	1.13E+02	0.00E+00	1.17E+02	7.47E+02	7.39E+00	0.00E+00
NRPM	MJ	4.40E+01	4.40E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
TRPE	MJ	6.98E+02	1.57E+02	0.00E+00	1.17E+02	7.47E+02	7.39E+00	0.00E+00
SM	kg	1.00E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
W	m <sup>3</sup>	1.21E+00	1.25E-02	0.00E+00	9.29E-03	4.28E-02	7.88E-03	0.00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; RPEM = 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	9.34E-08	4.87E-10	0.00E+00	3.62E-10	0.00E+00	0.00E+00	0.00E+00
Non-hazardous waste disposed	kg	6.57E-01	2.40E-02	0.00E+00	1.78E-02	0.00E+00	5.00E+01	0.00E+00
Radioactive waste disposed	kg	1.74E-03	2.94E-04	0.00E+00	2.19E-04	0.00E+00	0.00E+00	0.00E+00

## 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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.50E+02	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+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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