Environmental Product Declaration

EPD of multiple products, based on a representative product. In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

Surface-treated steel screw for indoor use
Surface-treated steel screw for outdoor use

from

Västsvensk Byggskruv AB

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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

General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): Construction products, 2019:14, version 1.3.2
PCR review was conducted by: The Technical Committee of the International EPD® System. Contact via info@environdec.com
Life Cycle Assessment (LCA)
LCA accountability: Sofia Lindroth, Miljögiraff AB
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by individual verifier Third-party verifier: Martyna Mikusinska, Sweco Environment AB, Martyna.Mikusinska@sweco.se. Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ 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

Owner of the EPD:
Västsvensk Byggskruv AB
Vävlagargatan 7
507 30 Brämhult
Sweden

Contact:
Lars Helgesson
Productmanager
lars.helgesson@vsbyggskruv.se
+4633 23 03 03

Website: www.vsbyggskruv.se

Description of the organisation:
Västsvensk Byggskruv AB (VSB) was founded in 1984. Since then, the company has been continually growing and is today considered one of the market leaders in Sweden. VSB's goal is to provide the highest quality products on the field with a high level of punctuality in terms of delivery deadlines, and where back orders are an exception to the rule. VSB are continuously working on product development and quality monitoring where identifying time-minimising and work-saving innovations is the objective.

Product-related or management system-related certifications:
VSB is an ISO 9001 certified company that aims to deliver top-quality screws and attachments. To be in a position to manage fast deliveries and avoid back orders VSB should hold large volumes in stock and, in the eyes of the customer, be the supplier with the most comprehensive knowledge about attachments.

VSB is also ISO 14001 certified and has its own environmental policy, which means that VSB must assume their environmental responsibility in full and continuously strive to minimise the company's environmental impact.

All VSB's articles are registered in and meet the requirements for Swedish Basta, Sunda Hus and Byggvarubedömningen. This means that the products apply to the limits for the substances included in the REACH candidate list.

Product information

Product name:
Surface treated steel screw for indoor use and surface treated steel screw for outdoor use.

Product identification:
The EPD is representable for screw for indoor use and screw for outdoor use and fastening screws (also an in- and outdoor screw). The results within this EPD reflects a representative product. The indoor screw and fastening are represented by the result for the outdoor screw as all three screws have similar results (A1-A3 GWP-GHG is -1% for indoor screw and +5% for other screw compared to outdoor screw). The outdoor screw constitutes the largest product group (47% of total production volume) and has the higher result for the GWP-GHG indicator in comparison to the indoor screw which is also a large product group (36% of total production volume). Fastening make up only 1% of VSB's total production volume.

Product description:
Screw types included in this EPD are among others Drywall-, Chipboard-, Round washer head-, Decking-, Wood- and different Fastening screws. The screw for indoor use meets the requirements of climate class 1 (EN 1995-1-1), the screw for outdoor use meets the requirements of climate class 3 (EN 1995-1-1) and is classified in corrosivity class C4.

UN CPC code:
42944

Geographical scope:
Countries and regions processes has been modelled to represent are:
A1: Taiwan
A2: Global
A3-A5 + module C + D: Sweden

LCA information

Functional unit / declared unit:
1 kg screw

Database(s) and LCA software used:
Database used is ecoinvent 3.9.1. The LCA software used is SimaPro 9.5.

Time representativeness & data quality:
The data used to model product manufacturing corresponds to year 2022. No data used is older than 10 years.

All suppliers have been contacted to obtain specific information about their products and site-specific manufacturing data for the screw production that occurs in Taiwan and for Västsvensk Byggskruvs manufacturing has been retrieved. Some primary data for upstream materials have been gathered while most upstream and downstream processes have been modelled based on generic data from databases. The collected data was reviewed according to EN 15804 and is deemed as of good quality.

Allocation:
Allocation had to be applied for pre-consumer steel scrap used in as input material and spillage of steel created in the manufacturing process of the screw.

All pre-consumer steel scrap used in the product has been allocated based on co-product allocation. In accordance with the PCR, a conservative assumption has been made where it is assumed that the pre-consumer steel carries the same environmental impact as virgin material.

Some scrap production of steel in the screw manufacturing occurs and should be treated with co-product allocation and then economic allocation according to PCR. Here, a conservative approach has been applied were the main product carries all the environmental impact from previous lifecycle steps. Hence, assuming that the spillage has no economic value.

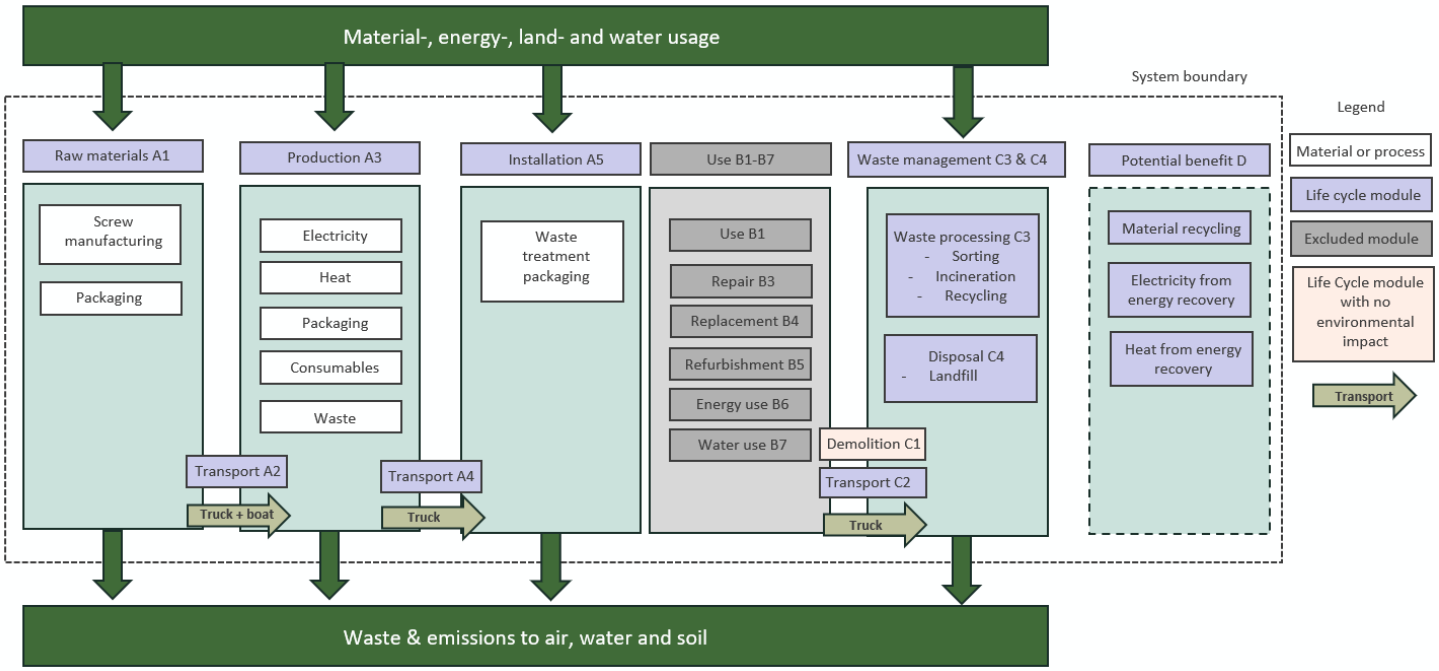
The allocation of waste follows the polluter-pays principle. The system boundary to the subsequent product system is set where the waste (e.g., the discarded product) reaches the end-of-waste state, i.e., when the material has become a usable flow (e.g., for reuse, energy recovery and/or recycling).

Cut-off criteria:
The cut-off criteria established by the PCR is 1% of all material and energy flows to a single unit process and 5% of total inflows (mass and energy) per module. No cut-offs exceeding this limit have been made.

In this study, the infrastructure and capital goods are included in the LCA analysis since it is not possible within reasonable effort to subtract the data on infrastructure/capital goods

Description of system boundaries:
Cradle to gate with options, modules C1–C4, module D and with optional modules A4 and A5. The product does not have any environmental impact in the use phase, which is why the B modules are not considered.

System diagram:



More information:

VSB's supply chain that is assessed extends from their suppliers of packaging materials, consumables, but above all from the supplier of screws in Taiwan, to VSB's operations in Brämhult for packaging and distribution. Hence, screw production in Taiwan falls under A1 Raw material.

The screw is manufactured by a supplier with factory in Kaohsiung City in Taiwan. The raw material to the screw manufacturing is steel wire and production process includes drawing the wire, forging and treading into desired screw shape. Lastly the screw is heat treated for better mechanical strength and surface treated.

Finished screw is transported by boat and truck (assumed to be freight lorry, 16-32t, EURO5, powered with diesel) to Västsvensk Byggskruv were packaging and warehousing takes place. During Västsvensk Byggskruvs operation, electricity and heat is used, and a small amount of production waste is created. Västsvensk Byggskruv produces their own solar energy via solar panels on the roof, and the electricity been modelled with 14% solarenergy and 86% Swedish residual mix. This electricity mix has a climate impact (GWP-GHG) of 0,082 kg CO2 eq/kWh. The finished products are packaged in different packaging solutions before distributed to customer.

The distribution transport (A4) is modelled with ruck, freight lorry 16-32t, EURO6, powered with diesel fuel, 249 km.

After use the product is transported to waste processing and the steel is assumed to be recycled with an 86% collection and recovery. In the C module no environmental impact of deconstruction is assumed to occur (C1), as well as any environmental impact from recycling is not considered following the cut-off approach applied (C3). What is considered in the C module is the transportation to waste processing which is assumed to occur with truck 50km (C2), sorting and preparation of steel scrap for recycling (C3) were the 86% share is recycled, and disposal (landfill) of waste not sent for recycling (C4) which is 14% of the steel.

The scenarios included are currently used and are representative of one of the most likely options. Where a scenario beyond the A3 module has been made, a conservative assumption has generally been made.

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	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLO	GLO	SE	SE	SE	-	-	-	-	-	-	-	SE	SE	SE	SE	SE
Specific data used	84%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	5%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-

X: Module declared, ND: Module not declared, SE: Sweden, GLO: Global

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, kg C/declared unit
Steel	1,0	60%	0%
TOTAL	1,0	60%	0%
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	**Weight biogenic carbon, kg C/declared unit**
Cardboard	0,051	50%	0,02
Lid, plastic	0,0070	0%	0
Box, plastic	0,0090	70%	0
Tape and plastic band	0,00018	0%	0
TOTAL	0,068	47%	0,02

The product does not contain any Substances of Very High Concern (SVHC)[1] that exceeds 0.1% of the product weight.

[1] SVHC and the Candidate List of SVHC are available via the European Chemicals Agency Candidate List of substances of very high concern for Authorisation - ECHA (europa.eu)

Results of the environmental performance indicators

EN 15804 reference package based on EF 3.1 has been used for calculating the environmental impact.

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks. It should be noted that the EPD results of modules A1-A3 without considering the results of module C is discouraged.

Mandatory impact category indicators according to EN 15804

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	**3,52E+00**	4,93E-02	2,24E-02	0,00E+00	9,24E-03	2,28E-02	8,57E-04	-4,66E-01
GWP-biogenic	kg CO_2 eq.	**-6,45E-02**	1,59E-05	6,85E-02	0,00E+00	2,98E-06	6,42E-05	3,74E-07	-9,97E-03
GWP-luluc	kg CO_2 eq.	**3,66E-03**	2,43E-05	1,04E-06	0,00E+00	4,56E-06	6,17E-05	5,17E-07	-9,41E-05
GWP-total	kg CO_2 eq.	**3,46E+00**	4,93E-02	9,09E-02	0,00E+00	9,25E-03	2,29E-02	8,58E-04	-4,76E-01
ODP	kg CFC 11 eq.	**6,45E-08**	1,07E-09	2,16E-10	0,00E+00	2,01E-10	3,61E-10	2,48E-11	-1,11E-08
AP	mol H^+ eq.	**1,65E-02**	1,08E-04	1,22E-05	0,00E+00	2,02E-05	2,75E-04	6,46E-06	-1,76E-03
EP-freshwater	kg P eq.	**1,71E-03**	3,50E-06	2,48E-07	0,00E+00	6,57E-07	1,22E-05	7,14E-08	-1,90E-04
EP-marine	kg N eq.	**3,78E-03**	2,72E-05	5,76E-06	0,00E+00	5,09E-06	6,53E-05	2,48E-06	-4,10E-04
EP-terrestrial	mol N eq.	**3,77E-02**	2,76E-04	5,45E-05	0,00E+00	5,18E-05	7,34E-04	2,66E-05	-4,46E-03
POCP	kg NMVOC eq.	**1,41E-02**	1,67E-04	1,55E-05	0,00E+00	3,13E-05	2,19E-04	9,25E-06	-2,50E-03
ADP-minerals&metals*	kg Sb eq.	**2,55E-05**	1,61E-07	5,78E-09	0,00E+00	3,02E-08	1,60E-06	1,19E-09	-2,43E-07
ADP-fossil*	MJ	**4,57E+01**	7,00E-01	1,63E-02	0,00E+00	1,31E-01	3,28E-01	2,14E-02	-5,22E+00
WDP*	m^3	**4,11E-01**	2,88E-03	4,17E-04	0,00E+00	5,41E-04	4,12E-03	9,43E-04	-2,89E-02
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 declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[2]	kg CO2 eq.	**3,53E+00**	4,93E-02	2,24E-02	0,00E+00	9,25E-03	2,29E-02	8,58E-04	-4,65E-01
PM	disease inc.	**1,68E-07**	3,67E-09	1,28E-10	0,00E+00	6,89E-10	3,98E-09	1,41E-10	-3,31E-08
IR[3]	kBq U-235 eq	**4,51E-01**	9,47E-04	6,39E-05	0,00E+00	1,78E-04	4,63E-03	1,35E-05	-2,27E-02
ETP – FW*	CTUe	**2,20E+01**	3,46E-01	8,68E-02	0,00E+00	6,49E-02	2,68E-01	1,00E-02	-1,29E+00
HTP – C*	CTUh	**4,19E-08**	2,25E-11	8,80E-12	0,00E+00	4,21E-12	3,89E-11	3,65E-13	-2,58E-09
HTP – NC*	CTUh	**4,62E-08**	4,97E-10	5,66E-11	0,00E+00	9,31E-11	1,76E-09	4,57E-12	-1,78E-09
Land use, SQP*	Pt	**1,88E+01**	4,23E-01	7,64E-03	0,00E+00	7,93E-02	6,26E-01	4,24E-02	-1,83E+00
Acronyms	PM: Particulate Matter, IRP: Ionizing Radiation - Human Health, ETP-FW: Ecotoxicity Potential – Freshwater, HTP-C: Human Toxicity Potential – Cancer, HTP-NC: Human Toxicity Potential – Non-Cancer, SQP: Soil Quality Potential Index								

** 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.*

Disclaimer: The results of the impact categories land use, human toxicity (cancer), human toxicity, non-cancer and ecotoxicity (freshwater) may be highly uncertain in LCAs that include capital goods/infrastructure in generic datasets, in case infrastructure/capital goods contribute greatly to the total results. This is because the LCI data of infrastructure/capital goods used to quantify these indicators in currently available generic datasets sometimes lack temporal, technological and geographical representativeness. Caution should be exercised when using the results of these indicators for decision-making purposes.

[2] 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_2 is set to zero.

[3] This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Resource use indicators

The use of primary energy resources is calculated according to option B in Annex 3 in PCR Construction Products v.1.3.2

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	**1,50E+00**	8,08E-04	0,00E+00	2,06E-03	6,44E-02	1,81E-04	-3,93E-01	-3,46E+01
PERM	MJ	**7,99E-01**	0,00E+00	-7,99E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	**2,30E+00**	8,08E-04	-7,99E-01	2,06E-03	6,44E-02	1,81E-04	-3,93E-01	-3,46E+01
PENRE	MJ	**6,19E+00**	1,74E-02	0,00E+00	1,39E-01	3,46E-01	2,27E-02	-5,49E+00	-1,19E+02
PENRM	MJ	**5,02E-01**	0,00E+00	-5,02E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	**6,69E+00**	1,74E-02	-5,02E-01	1,39E-01	3,46E-01	2,27E-02	-5,49E+00	-1,19E+02
SM	kg	**6,32E-01**	0,00E+00	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	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	0,00E+00
FW	m^3	**2,95E-03**	1,17E-04	2,82E-05	0,00E+00	2,20E-05	1,30E-04	2,28E-05	-1,86E-03
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 declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Hazardous waste disposed	kg	0	0	0	0	0	0	0	0
Non-hazardous waste disposed	kg	0	0	0	0	0	0	0	0
Radioactive waste disposed	kg	0	0	0	0	0	0	0	0

Output flow indicators

Results per declared unit									
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Components for re-use	kg	0	0	0	0	0	0	0	0
Material for recycling	kg	0,12	0	0	0	0	0,86	0	0
Materials for energy recovery	kg	0	0	0	0	0	0	0	0
Exported energy, electricity	MJ	0	0	0,05	0	0	0	0	0
Exported energy, thermal	MJ	0	0	0,11	0	0	0	0	0

Differences versus previous versions

The first version of this EPD was published 2023-01-04 and covered the products in- and outdoor screw.

The updated EPD convers an additional product group, other screws, that has similar production to the in- and outdoor screw. Another reason to update the EPD was the change in post-consumer recycled content for the steel used to produce the screws. In previous version the post-consumer recycled content was 11% but the content is 60% which is declared in this version of the EPD.

For this version of the EPD, all manufacturing data has been updated from year 2021 to 2022. A new version of the background data (ecoinvent 3.9 instead of ecoinvent 3.8) has also been applied in this version of the EPD.

References

General Programme Instructions of the International EPD® System. Version 4.0.

ISO 14025:2006, Environmental labels and declarations – Type III environmental declarations – Principles and procedures.

ISO 14040:2006, Environmental management – Life cycle assessment – Principles and framework.

ISO (2006c). ISO 14044: 2006, Environmental management – Life cycle assessment – Requirements and guidelines.

PCR Construction, PCR 2019:14, Version 1.3.2

Livscykelanalys av skruv från Västsvensk Byggskruv, Sofia Lindroth, Miljögiraff AB, 2024

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