

# Environmental Product Declaration

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

## Surface-treated steel screws for indoor use

from

**Heco Nordiska**

EPD of multiple products, based on the average results of the product group



Programme:	The International EPD System, <a href="http://www.environdec.com">www.environdec.com</a>
Programme operator:	EPD International AB
Type of EPD:	EPD of multiple products, based on the average results of the product group
EPD registration number:	EPD-IES-0025963:001
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*An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see [www.environdec.com](http://www.environdec.com)*



*This EPD covers multiple products:*

Wood screw; Chipboard screw; Drywall screw and different Fastening screws

## GENERAL INFORMATION

Programme Information	
<b>Programme:</b>	The International EPD® System
<b>Address:</b>	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
<b>Website:</b>	<a href="http://www.environdec.com">www.environdec.com</a>
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Product Category Rules (PCR)
<b>CEN standard EN 15804 serves as the Core Product Category Rules (PCR)</b>
<b>Product Category Rules (PCR):</b> <i>Construction products 2019:14, version 2.0.1, valid until 2030-04-07, UN CPC code: 42944</i>
<p><b>PCR review was conducted by:</b>  <i>The Technical Committee of the International EPD® System.            See <a href="http://www.environdec.com">www.environdec.com</a> for a list of members.            Review chair: Rob Rouwette (chair), Noa Meron (cochair).            The review panel may be contacted via the Secretariat <a href="http://www.environdec.com/contact">www.environdec.com/contact</a></i></p>

Third-party Verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:
<input checked="" type="checkbox"/> <b>Individual EPD verification without a pre-verified LCA/EPD tool</b> Third-party verifier: <i>Hüdai Kara PhD, Metsims Sustainability Consulting, Oxford, U.K.</i> Approved by: International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier:
<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 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 characterisation factors); and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

## INFORMATION ABOUT EPD OWNER

Owner of the EPD: Heco Nordiska AB

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Address and contact information of the LCA practitioner commissioned by the EPD owner:

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Description of the organisation:

Heco has a long history in the fastening industry, with roots dating back to the late 1980s. For more than three decades, the company has developed into a trusted supplier of screws and fastening solutions for the Nordic construction market.

Since 2020, Heco has been part of Volati AB and the Salix Group, strengthening its position and enabling continued growth. The headquarters and operations remain in Hillerstorp, just north of Värnamo in Sweden.

Heco offer a complete range of screws – including wood screws, drywall screws, board screws, sheet metal screws, drilling screws, and farmer screws – as well as fittings and a wide selection of accessories.

Today, Heco's team of around 50 colleagues work with purchasing, sales, packaging in boxes and bags, and surface treatment of fasteners. The coating process is carried out with great precision and is recognized as one of Heco's strongest capabilities.

Product-related or management system-related certifications:

Product meets the requirements for corrosivity class C1 and C2 according to SS-EN ISO 12944-2.

## PRODUCT INFORMATION

Product name: Surface-treated steel screws for indoor use

Product identification: All products included are surface-treated steel screws for indoor use. These are: Wood screw; Chipboard screw; Drywall screw; and different Fastening screws which meets the requirements for corrosivity class C1 and C2 according to SS-EN ISO 12944-2.

Visual representation (e.g., an image) of the product



UN CPC code: 42944

Product description: Heco's surface-treated screws for indoor use are steel screws with Zinc plated surface treatment used in the construction and carpentry industry for materials such as wood, drywall, chipboard etc. Products are available in different screw types.

Name and location of production site(s): Heco Nordiska AB in Hillerstorp, Sweden, and Heco's suppliers in Asia.

Multiple products: All products included in this EPD are steel screws for indoor use with zinc plated surface-treatment. This EPD represents different types of screws which all have the same composition and share the same geographical scope and production site. Due to this, and with the declared unit being 1 kg of Screw, there is no difference between the screw types nor the results for the different types of steel screws in this EPD.

The different screw types included in this EPD are shown in the table below.

<b>Zinc Surface treated screw for indoor use</b>
Wood screw
Chipboard screw
Drywall screw
Fastening screw

## CONTENT DECLARATION

Product content	Mass, kg	Post-consumer recycled material, mass-% of product	Biogenic material, mass-% of product	Biogenic material, kg C/product or declared unit
Steel	1	0%	0%	0
TOTAL	1	0%	0%	0

Packaging materials	Mass, kg	Mass-% (versus the product)	Biogenic material, kg C/product or declared unit
Cardboard	0,08	8%	0,036
Plastic	0,012	1,2%	0
TOTAL	0,092	9,2%	0,036

1 kg biogenic carbon in the product/packaging is equivalent to the uptake of 44/12 kg of CO<sub>2</sub>.

Hazardous substances from the candidate list of SVHC	EC No.	CAS No.	Mass-% per product or declared unit
-	-	-	-

## LCA INFORMATION

### Declared unit:

1 kg Screw. Conversion factor for the product is 1 kg per kg

### Reference service life:

Not applicable

### Time representativeness:

The collected data is representative of the year 2024 and was obtained directly from the supplier.

### Geographical scope:

The supply of raw material A1 steel is Global & Rest-of-World, the transport A2 is modelled for Global, Rest-of-World & Europe, and the manufacturing in module A3 is located in Asia for Heco's suppliers and at Heco in Sweden. Module C and D are for Sweden.

Database(s) and LCA software used: Ecoinvent 3.11 and SimaPro Craft 10.1.

### LCIA method:

The LCIA method follows the standard for Construction Products EN 15804:2012+A2:2019/AC:2021. EN 15804:2012+A2:2019/AC:2021 uses the impact categories and characterization factors of the LCIA methods used in Environmental Footprint 3.1 (EF 3.1), with the only difference that biogenic

carbon dioxide uptake is calculated as -1 and biogenic carbon dioxide emissions as +1, where EF 3.1 calculates this as 0 and 0, respectively.

Cut-off criteria:

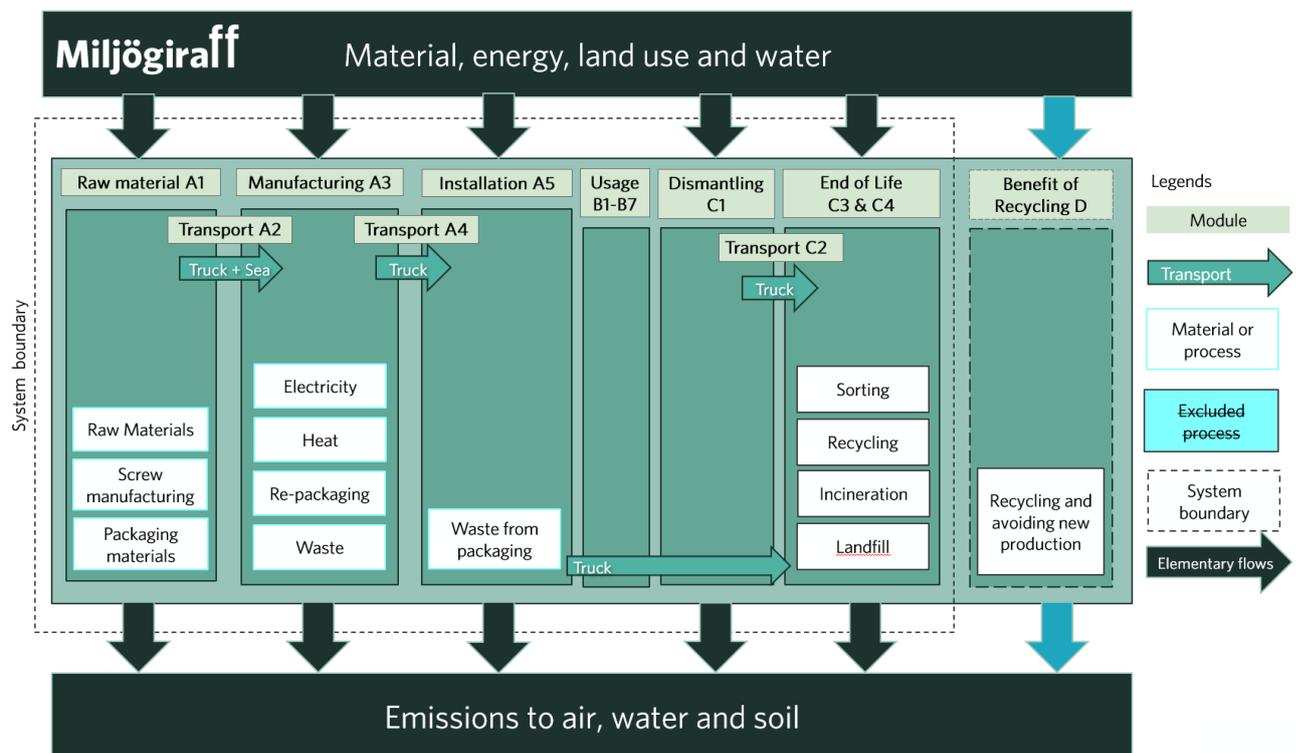
The cut-off criteria established by the PCR is 1% of all material and energy flows to a single unit process and 5% of total inflows (mass and energy) per module. No cut-offs exceeding this limit have been made.

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 (A1–A3 + C + D and A4-A5 and B1-B7). However, since the product is a passive product, there will be no environmental impact during the use phase.

Process flow diagram:



More information:

(A1-A3) Heco do not have any inhouse production of screws but purchase their surface treated screws from various suppliers in Asia. The production of screws at Heco's suppliers requires raw material, consumables and energy, whilst also generating waste. The finished surface treated screws are then packaged in different packaging alternatives and sent to Heco by sea and truck.

Heco's storage of screws is located in Hillerstorp, Sweden, where a majority of products arrive in finished packaging ready for distribution. A small amount of screws arrives in bulk in boxes on wood pallet which is repackaged into cardboard or plastic packaging alternatives. The packaging declared in product content declaration is only considering the distribution packaging to end-customer. Apart from

the repackaging waste, which is assumed to be 100% incinerated, no other waste of significance occurs at Heco.

Heco purchase certified electricity from 100% hydropower and the climate footprint (GWP-GHG) is 0,00435 kg CO<sub>2</sub>/kWh.

Manufacturing data such as electricity consumption has been allocated based on mass.

(A4) The finished products are transported 266 km by diesel trucks.

(A5) Installation of the product is assumed to occur in a way that has no environmental impact, e.g. by hand. What is considered for the installation is the waste treatment of the packaging materials that comes with the product, which follows the end-of-life treatment in module C.

(B1-B7) It is assumed that there are no significant environmental aspects during the use of the product.

(C1-C4) After use the product is transported to waste processing. In the C module, default values provided by the PCR 2019:14 v.2.0.1 were used for demolition/deconstruction (C1) as no specific data was obtained. The default values for transport distances to waste treatment (C2) were also used, 80 km for materials not to be incinerated and 130 km for materials to be incinerated.

Since the majority of customers exists in Sweden, the relevant end-of-life scenario has been represented with a Swedish case.

For the waste treatment (C3), the steel is assumed to be 100% recycled. The environmental impact from recycling is not considered following the cut-off approach applied.

Since the product packaging follows a Swedish waste treatment scenario which is mixed, the following 100% scenarios are presented as additional LCA results: 100% recycling, 100% Incineration and 100% Landfill.

(D) Module D accounts for the potential environmental benefits or burdens resulting from material recycling and energy recovery during incineration.

#### Data quality summary

The EPD is based on data collected by Heco and their suppliers representing the production year 2024. The EPD is representative of the production of 1 kg Screw from Heco's suppliers in Asia and at Heco in Sweden. The end-of-life stage of the EPD covers Sweden.

Primary data have been collected about manufacturing processes and is combined with representative secondary data from the ecoinvent database v.3.11. The quality of the relevant data used for the EPD using EN 15804:2012+A2:2019, Annex E, E.1, is in terms of geographical representativeness good, technical representativeness good and fair, and for time representativeness very good, good and poor. The reason for using the datasets with poor time representativeness is that no more recent datasets are available in the database.

Modules declared, geographical scope, share of primary 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	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	GLO	GLO	GLO	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	
Share of primary data	23%			-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Variation – products	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Declaration of data sources, reference years, data categories, and share of primary data:

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Raw material - Steel (Pig Iron)	Database	Ecoinvent v3.11	2024	Secondary data	0%
Manufacturing processes	Collected data, Database	EPD owner & Suppliers, Ecoinvent v3.11	2024	Primary data, Representative secondary data	18%
Transport	Database	Ecoinvent v3.11	2024	Primary data	5%
Other processes	Collected data, Database	EPD owner, Suppliers, Ecoinvent v3.11	2024	Representative secondary data	0%
Total share of primary data, of GWP-GHG results for A1-A3					23%

The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

## ENVIRONMENTAL PERFORMANCE

### LCA results of the product(s) - main environmental performance results

#### Mandatory impact category indicators according to EN 15804

Results per 1 kg Screw										
Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-total	kg CO <sub>2</sub> eq.	<b>5,4E+00</b>	5,4E-02	1,6E-01	0,0E+00	4,0E-04	1,5E-02	3,4E-03	0,0E+00	-1,8E+00
GWP-fossil	kg CO <sub>2</sub> eq.	<b>5,5E+00</b>	5,4E-02	3,1E-02	0,0E+00	4,0E-04	1,5E-02	3,4E-03	0,0E+00	-1,8E+00
GWP-biogenic	kg CO <sub>2</sub> eq.	<b>-1,2E-01</b>	1,2E-05	1,3E-01	0,0E+00	4,4E-08	3,2E-06	1,8E-06	0,0E+00	3,9E-03
GWP-luluc	kg CO <sub>2</sub> eq.	<b>1,2E-02</b>	1,8E-05	2,1E-06	0,0E+00	4,1E-08	5,0E-06	8,2E-06	0,0E+00	-1,6E-05
ODP	kg CFC 11 eq.	<b>5,2E-08</b>	1,2E-09	9,0E-11	0,0E+00	5,9E-12	3,3E-10	5,2E-11	0,0E+00	-6,6E-09
AP	mol H <sup>+</sup> eq.	<b>4,5E-02</b>	1,2E-04	2,3E-05	0,0E+00	3,6E-06	4,9E-05	3,0E-05	0,0E+00	-6,0E-03
EP-freshwater	kg P eq.	<b>3,0E-04</b>	4,0E-07	3,7E-08	0,0E+00	1,4E-09	1,1E-07	1,4E-08	0,0E+00	-8,5E-05
EP-marine	kg N eq.	<b>7,1E-03</b>	2,7E-05	9,2E-06	0,0E+00	1,7E-06	1,6E-05	1,4E-05	0,0E+00	-1,3E-03
EP-terrestrial	mol N eq.	<b>8,2E-02</b>	3,0E-04	9,8E-05	0,0E+00	1,8E-05	1,8E-04	1,5E-04	0,0E+00	-1,5E-02
POCP	kg NMVOC eq.	<b>2,6E-02</b>	1,8E-04	3,1E-05	0,0E+00	5,4E-06	7,4E-05	4,6E-05	0,0E+00	-5,4E-03
ADP-minerals&metals*	kg Sb eq.	<b>3,4E-04</b>	1,9E-07	1,4E-08	0,0E+00	1,4E-10	5,1E-08	2,5E-09	0,0E+00	8,0E-07
ADP-fossil*	MJ	<b>6,2E+01</b>	7,7E-01	5,8E-02	0,0E+00	5,2E-03	2,2E-01	5,3E-02	0,0E+00	-1,9E+01
WDP*	m <sup>3</sup>	<b>2,3E+00</b>	3,0E-03	4,2E-04	0,0E+00	1,1E-05	8,4E-04	2,2E-04	0,0E+00	-1,1E-01
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 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. The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3). Negative values in Module D represent potential net benefits from material recycling and energy recovery beyond the system boundary.*

*Note: Biogenic carbon in packaging is balanced in A1–A3.*

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

## Additional mandatory and voluntary impact category indicators

### Results per 1 kg Screw

Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
GWP-GHG <sup>1</sup>	kg CO <sub>2</sub> eq.	5,5E+00	5,4E-02	3,1E-02	0,0E+00	4,0E-04	1,5E-02	3,4E-03	0,0E+00	-1,8E+00
PM	disease inc.	4,5E-07	4,0E-09	3,7E-10	0,0E+00	1,0E-10	1,2E-09	8,5E-10	0,0E+00	-1,3E-07
IR <sup>2</sup>	kBq U-235 eq	8,9E-02	3,4E-04	6,3E-05	0,0E+00	8,6E-07	9,3E-05	3,5E-04	0,0E+00	-1,7E-02
ETP – FW*	CTUe	7,4E+01	1,0E-01	1,0E-01	0,0E+00	2,8E-04	2,9E-02	2,6E-03	0,0E+00	-4,7E+00
HTP – C*	CTUh	7,3E-09	9,0E-12	3,2E-12	0,0E+00	4,1E-14	2,6E-12	3,7E-13	0,0E+00	-2,6E-09
HTP – NC*	CTUh	2,2E-07	4,8E-10	1,4E-10	0,0E+00	6,4E-13	1,3E-10	7,0E-12	0,0E+00	-2,9E-09
Land use, SQP*	Pt	2,8E+01	4,6E-01	3,1E-02	0,0E+00	3,4E-04	1,3E-01	5,3E-03	0,0E+00	-6,9E+00
Acronyms	GWP-GHG: Global Warming Potential, Greenhouse Gases, 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									

*Additional voluntary indicators e.g. the voluntary indicators from EN 15804 or the global indicators according to ISO 21930:2017*

*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. Negative values in Module D represent potential net benefits from material recycling and energy recovery beyond the system boundary.*

*\* 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.*

<sup>1</sup> 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.

<sup>2</sup> 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

Results per 1 kg Screw										
Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
PERE	MJ	9,7E+00	1,3E-02	1,8E-03	0,0E+00	3,3E-05	3,5E-03	6,4E-03	0,0E+00	-1,4E+00
PERM	MJ	1,3E+00	0,0E+00	-1,3E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
PERT	MJ	1,1E+01	1,3E-02	-1,3E+00	0,0E+00	3,3E-05	3,5E-03	6,4E-03	0,0E+00	-1,4E+00
PENRE	MJ	6,6E+01	8,2E-01	6,2E-02	0,0E+00	5,5E-03	2,3E-01	5,6E-02	0,0E+00	-2,0E+01
PENRM	MJ	3,7E-01	0,0E+00	-3,7E-01	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
PENRT	MJ	6,6E+01	8,2E-01	-3,1E-01	0,0E+00	5,5E-03	2,3E-01	5,6E-02	0,0E+00	-2,0E+01
SM	kg	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
RSF	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
NRSF	MJ	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
FW	m <sup>3</sup>	5,8E-02	1,2E-04	8,5E-05	0,0E+00	3,8E-07	3,2E-05	5,7E-06	0,0E+00	-7,4E-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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water									

*Disclaimer: Negative values in Module D represent potential net benefits from material recycling and energy recovery beyond the system boundary.*

## Waste indicators

Results per 1 kg Screw										
Indicator	Unit	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Non-hazardous waste disposed	kg	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Radioactive waste disposed	kg	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00

## Output flow indicators

Results per 1 kg Screw										
Indicator	Unit	A1-A3	A4	A5	B1	C1	C2	C3	C4	D
Components for re-use	kg	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Material for recycling	kg	0,11	0,00	0,06	0,00	0,00	0,00	1,00	0,00	0,00
Materials for energy recovery	kg	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Exported energy, electricity	MJ	0,03	0,00	0,16	0,00	0,00	0,00	0,00	0,00	0,00
Exported energy, thermal	MJ	0,07	0,00	0,37	0,00	0,00	0,00	0,00	0,00	0,00

## Additional LCA results

### 100% Recycling Scenario for modules A5, C1-C4 & D

#### Mandatory impact category indicators according to EN 15804

Results per 1 kg Screw							
Indicator	Unit	A5	C1	C2	C3	C4	D
GWP-total	kg CO <sub>2</sub> eq.	1,4E-01	4,0E-04	1,5E-02	3,4E-03	0,0E+00	-1,8E+00
GWP-fossil	kg CO <sub>2</sub> eq.	3,2E-03	4,0E-04	1,5E-02	3,4E-03	0,0E+00	-1,8E+00
GWP-biogenic	kg CO <sub>2</sub> eq.	1,3E-01	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
GWP-luluc	kg CO <sub>2</sub> eq.	1,7E-06	4,1E-08	5,0E-06	8,2E-06	0,0E+00	3,8E-04
ODP	kg CFC 11 eq.	6,9E-11	5,9E-12	3,3E-10	5,2E-11	0,0E+00	-7,0E-09
AP	mol H <sup>+</sup> eq.	1,1E-05	3,6E-06	4,9E-05	3,0E-05	0,0E+00	-6,0E-03
EP-freshwater	kg P eq.	2,3E-08	1,4E-09	1,1E-07	1,4E-08	0,0E+00	-8,5E-05
EP-marine	kg N eq.	3,8E-06	1,7E-06	1,6E-05	1,4E-05	0,0E+00	-1,2E-03
EP-terrestrial	mol N eq.	4,2E-05	1,8E-05	1,8E-04	1,5E-04	0,0E+00	-1,5E-02
POCP	kg NMVOC eq.	1,7E-05	5,4E-06	7,4E-05	4,6E-05	0,0E+00	-5,5E-03
ADP-minerals&metals*	kg Sb eq.	1,1E-08	1,4E-10	5,1E-08	2,5E-09	0,0E+00	7,8E-07
ADP-fossil*	MJ	4,6E-02	5,2E-03	2,2E-01	5,3E-02	0,0E+00	-1,9E+01
WDP*	m <sup>3</sup>	1,8E-04	1,1E-05	8,4E-04	2,2E-04	0,0E+00	-1,1E-01
GWP-GHG <sup>3</sup>	kg CO <sub>2</sub> eq.	3,2E-03	4,0E-04	1,5E-02	3,4E-03	0,0E+00	-1,8E+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, GWP-GHG: Global Warming Potential for Greenhouse Gases

*Disclaimer: 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. The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3). Negative values in Module D represent potential net benefits from material recycling and energy recovery beyond the system boundary.*

*Note: Biogenic carbon in packaging is balanced in A1–A3.*

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

<sup>3</sup> 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.

## 100% Incineration Scenario for modules A5, C1-C4 & D

### Mandatory impact category indicators according to EN 15804

Results per 1 kg Screw							
Indicator	Unit	A5	C1	C2	C3	C4	D
GWP-total	kg CO <sub>2</sub> eq.	1,7E-01	4,0E-04	2,5E-02	3,4E-03	1,8E-02	-1,6E-01
GWP-fossil	kg CO <sub>2</sub> eq.	3,4E-02	4,0E-04	2,5E-02	3,4E-03	1,8E-02	-1,6E-01
GWP-biogenic	kg CO <sub>2</sub> eq.	1,3E-01	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
GWP-luluc	kg CO <sub>2</sub> eq.	2,6E-06	4,1E-08	8,2E-06	8,2E-06	8,7E-06	-5,2E-04
ODP	kg CFC 11 eq.	1,2E-10	5,9E-12	5,4E-10	5,2E-11	3,7E-10	-1,1E-09
AP	mol H <sup>+</sup> eq.	4,0E-05	3,6E-06	7,9E-05	3,0E-05	1,0E-04	-5,8E-04
EP-freshwater	kg P eq.	6,1E-08	1,4E-09	1,8E-07	1,4E-08	2,7E-07	-7,5E-06
EP-marine	kg N eq.	1,7E-05	1,7E-06	2,6E-05	1,4E-05	3,8E-05	-1,3E-04
EP-terrestrial	mol N eq.	1,8E-04	1,8E-05	2,9E-04	1,5E-04	4,2E-04	-1,6E-03
POCP	kg NMVOC eq.	5,2E-05	5,4E-06	1,2E-04	4,6E-05	1,4E-04	-5,1E-04
ADP-minerals&metals*	kg Sb eq.	1,9E-08	1,4E-10	8,3E-08	2,5E-09	5,0E-08	1,2E-09
ADP-fossil*	MJ	7,7E-02	5,2E-03	3,5E-01	5,3E-02	2,9E-01	-2,2E+00
WDP*	m <sup>3</sup>	7,5E-04	1,1E-05	1,4E-03	2,2E-04	7,8E-03	-1,8E-02
GWP-GHG <sup>4</sup>	kg CO <sub>2</sub> eq.	3,4E-02	4,0E-04	2,5E-02	3,4E-03	1,8E-02	-1,6E-01

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, GWP-GHG: Global Warming Potential for Greenhouse Gases

*Disclaimer: 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. The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3). Negative values in Module D represent potential net benefits from material recycling and energy recovery beyond the system boundary.*

*Note: Biogenic carbon in packaging is balanced in A1–A3.*

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

<sup>4</sup> 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.

## 100% Landfill Scenario for modules A5, C1-C4 & D

### Mandatory impact category indicators according to EN 15804

Results per 1 kg Screw							
Indicator	Unit	A5	C1	C2	C3	C4	D
GWP-total	kg CO <sub>2</sub> eq.	1,4E-01	4,0E-04	1,5E-02	3,4E-03	6,8E-03	-1,5E-01
GWP-fossil	kg CO <sub>2</sub> eq.	3,8E-03	4,0E-04	1,5E-02	3,4E-03	6,8E-03	-1,5E-01
GWP-biogenic	kg CO <sub>2</sub> eq.	1,3E-01	0,0E+00	0,0E+00	0,0E+00	0,0E+00	0,0E+00
GWP-luluc	kg CO <sub>2</sub> eq.	1,8E-06	4,1E-08	5,0E-06	8,2E-06	3,6E-06	-5,3E-06
ODP	kg CFC 11 eq.	8,8E-11	5,9E-12	3,3E-10	5,2E-11	1,8E-10	-5,5E-10
AP	mol H <sup>+</sup> eq.	1,5E-05	3,6E-06	4,9E-05	3,0E-05	4,9E-05	-5,0E-04
EP-freshwater	kg P eq.	2,6E-08	1,4E-09	1,1E-07	1,4E-08	6,3E-08	-7,1E-06
EP-marine	kg N eq.	5,4E-06	1,7E-06	1,6E-05	1,4E-05	1,9E-05	-1,0E-04
EP-terrestrial	mol N eq.	6,0E-05	1,8E-05	1,8E-04	1,5E-04	2,1E-04	-1,3E-03
POCP	kg NMVOC eq.	2,3E-05	5,4E-06	7,4E-05	4,6E-05	7,4E-05	-4,5E-04
ADP-minerals&metals*	kg Sb eq.	1,1E-08	1,4E-10	5,1E-08	2,5E-09	9,4E-09	6,6E-08
ADP-fossil*	MJ	6,0E-02	5,2E-03	2,2E-01	5,3E-02	1,6E-01	-1,5E+00
WDP*	m <sup>3</sup>	2,3E-04	1,1E-05	8,4E-04	2,2E-04	6,7E-03	-9,0E-03
GWP-GHG <sup>5</sup>	kg CO <sub>2</sub> eq.	3,8E-03	4,0E-04	1,5E-02	3,4E-03	6,8E-03	-1,5E-01

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, GWP-GHG: Global Warming Potential for Greenhouse Gases

*Disclaimer: 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. The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3). Negative values in Module D represent potential net benefits from material recycling and energy recovery beyond the system boundary.*

*Note: Biogenic carbon in packaging is balanced in A1–A3.*

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

<sup>5</sup> 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.

## ABBREVIATIONS

Abbreviation	Definition
<b>General Abbreviations</b>	
EN	European Norm (Standard)
EPD	Environmental Product Declaration
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
PCR	Product Category Rules
c-PCR	Complementary Product Category Rules
CEN	European Committee for Standardization
CPC	Central product classification
GHG	Greenhouse Gas
PEF	Product Environmental Footprint
<b>Environmental Impact Indicators (EN 15804)</b>	
GHG	Greenhouse Gas
GWP	Global Warming Potential (kg CO <sub>2</sub> eq.)
GWP-fossil	Global Warming Potential from fossil sources (kg CO <sub>2</sub> eq.)
GWP-biogenic	Global Warming Potential from biogenic sources (kg CO <sub>2</sub> eq.)
GWP-luluc	Global Warming Potential from land use and land use change (kg CO <sub>2</sub> eq.)
GWP-total	Total Global Warming Potential (kg CO <sub>2</sub> eq.)
GWP-GHG	Global Warming Potential for greenhouse gases (kg CO <sub>2</sub> eq.)
ODP	Ozone Depletion Potential (kg CFC-11 eq.)
AP	Acidification Potential (mol H <sup>+</sup> eq.)
EP	Eutrophication Potential
EP-freshwater	Freshwater eutrophication potential (kg P eq.)
EP-marine	Marine eutrophication potential (kg N eq.)
EP-terrestrial	Terrestrial eutrophication potential (mol N eq.)
POCP	Photochemical Ozone Creation Potential (kg NMVOC eq.)
ADP	Abiotic Depletion Potential
ADP-minerals&metals	Abiotic depletion potential for non-fossil resources (kg Sb eq.)
ADP-fossil	Abiotic depletion potential for fossil resources (MJ)
WDP	Water Deprivation Potential (m <sup>3</sup> )
<b>Resource Use Indicators</b>	
PERE	Renewable primary energy (excluding as raw materials) (MJ)
PERM	Renewable primary energy used as raw materials (MJ)
PERT	Total renewable primary energy (MJ)
PENRE	Non-renewable primary energy (excluding as raw materials) (MJ)
PENRM	Non-renewable primary energy used as raw materials (MJ)
PENRT	Total non-renewable primary energy (MJ)
SM	Use of secondary material (kg)
RSF	Use of renewable secondary fuels (MJ)
NRSF	Use of non-renewable secondary fuels (MJ)
FW	Use of net fresh water (m <sup>3</sup> )
HW	Hazardous Waste (disposed) (kg)
NHW	Non-Hazardous Waste (disposed) (kg)
RW	Radioactive Waste (disposed) (kg)
<b>Output Flow Indicators</b>	
CFR	Components for Reuse (kg)
MR	Material for Recycling (kg)
MER	Materials for Energy Recovery (kg)
EEE	Exported Energy, Electricity (MJ)

EET	Exported Energy, Thermal (MJ)
<b>Lifecycle Stages / Modules</b>	
A1	Raw material supply
A2	Transport
A3	Manufacturing
A4	Transport to site
A5	Construction/Installation
B1	Use
B2	Maintenance
B3	Repair
B4	Replacement
B5	Refurbishment
B6	Operational energy use
B7	Operational water use
C1	Deconstruction/Demolition
C2	Transport to waste processing
C3	Waste processing
C4	Disposal
D	Reuse-Recovery-Recycling potential
<b>Other Relevant Terms</b>	
SVHC	Substances of Very High Concern
EC No.	European Community Number
CAS No.	Chemical Abstracts Service Number
MJ	Megajoule
kg	Kilogram
m <sup>3</sup>	Cubic Meter
NM VOC	Non-Methane Volatile Organic Compounds
Sb eq.	Antimony Equivalents
P eq.	Phosphorus Equivalents
N eq.	Nitrogen Equivalents
CFC-11 eq.	Chlorofluorocarbon-11 Equivalents
CO <sub>2</sub> eq.	Carbon Dioxide Equivalents
kg C	Kilograms of Carbon
kg CO <sub>2</sub> eq.	Kilograms of Carbon Dioxide Equivalent
ND	Not Declared

## REFERENCES

General Programme Instructions of International EPD System. Version 5.0.1

PCR 2019:14. Construction products. Version 2.0.1

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

EN 15804:2012+A2:2019/AC:2021

Life Cycle Assessment of Screws by Heco AB, Miljögiraff, 2025

## VERSION HISTORY

**Original Version of the EPD, 2025-11-26**

