ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	**EJOT SE & Co KG, Market Unit Construction**
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-EJO-20210153-IBK1-EN
Issue date	14.01.2022
Valid to	13.01.2027

Self-tapping screws

EJOT SE & Co. KG, Market Unit Construction

Institut Bauen und Umwelt e.V.

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ECO PLATFORM EPD VERIFIED

1. General Information

EJOT SE & Co. KG,
Market Unit Construction

Self-tapping screws

Programme holder
IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Owner of the declaration
EJOT SE & Co. KG
Market Unit Construction
In der Stockwiese 35
57334 Bad Laasphe

Declaration number
EPD-EJO-20210153-IBK1-EN

Declared product / declared unit
1kg self-tapping screws.

This declaration is based on the product category rules:
Self-tapping screws, 11.2017
(PCR checked and approved by the SVR)

Scope:
The EPD refers to self-tapping screws made of steel, self-tapping screws made of bi-metal as well as self-tapping screws made of stainless steel of EJOT Baubefestigungen GmbH, manufactured in the Bad Laasphe plant in Germany.
Declared is 1 kg of self-tapping screws made of stainless steel as "worst case".

Issue date
14.01.2022

Valid to
13.01.2027

The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.
The EPD was created according to the specifications of *EN 15804+A2*. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard *EN 15804* serves as the core PCR
Independent verification of the declaration and data according to *ISO 14025:2011*
☐ internally ☒ externally

Dipl. Ing. Hans Peters
(chairman of Institut Bauen und Umwelt e.V.)

Dr. Alexander Röder
(Managing Director Institut Bauen und Umwelt e.V.))

Dr. Stefan Diederichs
(Independent verifier)

2. Product

2.1 Product description/Product definition

Self-tapping screws made of steel, stainless steel or bi-metal are fasteners for fixing metal profiles to corresponding substructures. Self-tapping screws produce their nut thread without cutting by deforming the material. A general distinction is made between self-drilling screws and screws without a drill point. The described self-tapping screws are made of stainless steel of different corrosion resistance classes. Depending on the requirements and material, they are provided with a lubricant. Furthermore, depending on the application, they are equipped with a corresponding sealing washer made of steel or stainless steel and EPDM sealing rubber (ethylene-propylene-diene rubber).

These are products approved by European or national building authorities as well as constructive products without approval. This results in the following variants.

Product according to CPR based on an ETA:
For the placing of the product on the market in the European Union/European Free Trade Association /EU/EFTA) (with the exception of Switzerland) the Regulation (EU) No. 305/2011 (CPR) applies. The product needs a declaration of performance taking into consideration the respective *ETA* and the CE-marking. For the application and use the respective national provisions apply.

Products with exclusively national regulation:
The respective national regulations at the place of use apply to the use of the product, in Germany for example the building regulations of the federal states, and the technical regulations based on these regulations.

There are no building code requirements for constructive products.

2.2 Application

Self-tapping screws with and without drill point are always used when a fastening can only be carried out on one side and it is possible to dispense with the

additional operation of "thread cutting". This is usually the case with thin-walled metal connections such as those used in modern industrial lightweight construction. For these applications, fasteners that do not exceed a thread outer diameter of 10 mm are usually sufficient.
Typical application examples on different substructures are shown below.

2.3 Technical Data

Structural data for self-tapping screws (self-tapping and self-drilling) can be found in the corresponding approvals and technical drawings, shown below as an example using an extract from *ETA 10/0200.*

Construction data

Name	Value	Unit
Screw diameter	4.8 - 8	mm
Usage category as per ETA	ETA-10/0200; ETA-21/0420; ETA-21/0421; ETA-13/0177; ETA-18/0680	-
Characteristic tension resistance	42 - 134	kN
Screw length	19-300	mm
Sealing washer diameter	11-29	mm
characteristic shear force capacity	0.55 – 11.3	kN
Bulk density	7850	kg/m^3
Material	A2 / A4 / Carbon steel	-
Test basis	EAD-330046-01-0602 EAD-330047-01-0602 DIBT Communication 6/1999	

Performance values of the product in accordance with the declaration of performance with respect to its essential characteristics according to the applicable *ETA*.
Performance data of the product with respect to its characteristics in accordance with the relevant technical provision (no CE-marking).

All approvals can be downloaded via the following link: https://www.ejot.com/zulassungen-eta-pruefzeugnisse .

2.4 Delivery status

The information on the product properties and quantity information are clearly visible on the outside of the packaging. Self-tapping screws, for example, are delivered in packaging units of 500 fasteners per box. For long screws (e.g. 300 mm) there are 50 screws in the box.

2.5 Base materials/Ancillary materials

Self-tapping screws (self-tapping and self-drilling) are usually made of the following materials: steel, stainless steel or corresponding bi-metal compositions. Depending on the requirements and material, these are provided with a galvanic zinc coating and/or a lubricant. Furthermore, depending on the application, they are provided with a corresponding sealing washer made of steel, stainless steel or aluminium and EPDM sealing rubber.

Steel

Steel is the term used to describe metallic alloys whose main component is iron and which (unlike cast iron) can be processed by forming. All technical iron-carbon alloys whose carbon content is between 0 and 2.06 % can be designated as steel. The proportion of other elements must be significantly lower than that of iron.

Stainless steel

Stainless steel (according to *EN 10020*) is a designation for alloyed or unalloyed steels with a special degree of purity, for example steels whose sulphur and phosphorus content (so-called iron companions) does not exceed 0.025 %. A frequently used alloy in the production of self-tapping screws, for example, is a steel of the variety 1.4301.
1.4301 is an austenitic, corrosion-resistant 18/10 Cr-Ni steel which, due to its low carbon content, is resistant to intergranular corrosion after welding in sheet thicknesses up to 5 mm even without subsequent heat treatment. It is approved for thermal stress up to 600 °C.

EPDM

Ethylene-propylene-diene rubber (abbreviation EPDM, ethylene-propylene-diene) is a terpolymer elastomer (rubber) and thus a synthetic rubber. It is produced with metallocene or Ziegler-Natta catalysts based on vanadium compounds and aluminium alkyl chlorides. The dienes used are unconjugated dienes, of which only one double bond is involved in the formation of the polymer chain, so that further double bonds remain outside the direct chain structure and, in contrast to EPM, can also be vulcanised with sulphur, whereas EPM can only be peroxide-crosslinked.

Galvanic zinc coating
In electrogalvanising, a comparatively thin zinc layer is deposited on the component surface in an electrolytic process. The properties of the applied zinc layer depend, among other things, on the current strength, the time of the current flow and the electrolyte solution used.

Lubricating
Environmentally friendly, aqueous suspensions, emulsions and dispersions are used as lubricating agents, which, depending on the area of application, include paraffins, polymers or waxes. Some lubricants also contain small amounts of alcohol.

This product/article/at least one partial article contains substances listed in the candidate list (date: 08.07.2021) exceeding 0.1 percentage by mass: no.

This product/article/at least one partial article contains other CMR substances in categories 1A or 1B which are not on the candidate list, exceeding 0.1 percentage by mass: no.

Biocide products were added to this construction product or it has been treated with biocide products (this then concerns a treated product as defined by the (EU) Ordinance on Biocide Products No. 528/2012): no.

2.6 Manufacture
For the production of self-tapping screws, the following manufacturing process is mainly used nowadays:

The cold or hot extrusion process on a multi-stage press. The raw material is delivered as wire wound on spools and is uncoiled and straightened in the upstream equipment. Modern cold or hot extrusion presses work in multiple stages, i.e. several operations are carried out in succession in one stroke, for example shearing of the blank, preforming of the screw head, final upsetting, deburring and reducing of the threaded part.
In the following process, the thread is produced without cutting using a thread rolling machine. If the screws are self-drilling, the thread rolling is preceded by the operation of pinching the drill tip. Between each of the operations, the parts are cleaned in an appropriately designed washing line. Finally, the surfaces of the screws are galvanised and coated with dry-lubricant.

2.7 Environment and health during manufacturing
The steels and production materials used for the manufacture of self-tapping and self-drilling screws are non-toxic and have no impact on humans and the environment or aquatic and terrestrial organisms. The vapours produced during the manufacturing process of the screws are removed from the production sites by appropriate filter systems and ventilation systems and cleaned by filter systems. Strict safety regulations apply in the EJOT production sites, e.g. wearing suitable work clothing as well as hearing protection. These preventive measures serve to minimise risks and prevent occupational accidents.
The EJOT Holding GmbH & Co. KG with its corporate units, including EJOT Baubefestigungen GmbH, has introduced an environmental management system and applies it to the development, production, testing and distribution of self-tapping screws and corresponding cold formed parts (Certificate- Registration No.: Um302825).

2.8 Product processing/Installation
Self-tapping screws are used to fasten and connect profiled panels and elements made of metal. For all bolted connections it applies that only if the installation instructions given in the approval notice (if required) for fasteners are complied with, the characteristic values listed there may be expected. Except for self-drilling screws, the load-bearing capacity of the screw connections is decisively dependent on the diameter of the pre-drilled hole. The hole diameters must comply with the approval. For screwing in the self-tapping screws, low-speed screwdrivers designed for this purpose are recommended, the assembly of self-tapping screws with so-called "impact wrenches" is not permitted. The recommendations of the screw manufacturers must be observed.
Screws with pre-assembled sealing washer are to be screwed in depth stop-oriented. An impermissible deformation of the sealing washer is prevented by the correctly adjusted depth stop on the screwdrivers.
When fastening sandwich panels and when fastening to the top chords of trapezoidal profiles, major visible deformations of the components due to overtightened screws must be avoided.

2.9 Packaging
Cardboard/paper (*EAK* 15 01 01) and polyethylene bags (*EAK* 15 01 02) are used for packaging. Waste products: Packaging materials are disposed of by INTERSEROH. For large orders, the screws are shipped on returnable or disposable pallets.

2.10 Condition of use
No material change is expected for the screws during use

2.11 Environment and health during use
No negative effects on the environment or human health are known from self-tapping screws (self-tapping as well as self-drilling) in the installed state.

2.12 Reference service life

Due to the wide range of applications, no reference service life is given. The expected service life of self-tapping screws generally depends on their use. The prevailing external influences can greatly affect the service life.
According to the European Technical Approval, the average service life is > 25 years. However, much longer service lives are also known. It should be noted that the screws are used in accordance with the technical regulations.

2.13 Extraordinary effects

Fire
Self-tapping screws meet the requirements of fire resistance class A1 and may be classified in resistance class A1 and class A1fl without testing in accordance with European Commission *Decision 96/603/EC*. In the area of fire protection, the following building material class according to *EN 13501-1 is* complied with:

Brandschutz

Name	Value
Building material class	A1fl

Water
Water usually has no effect on the self-tapping screws, as these are made of a corrosion-resistant stainless steel or have a surface coating (galvanisation).

Mechanical destruction
The mechanical destruction of self-tapping screws has no impact on the environment.

2.14 Re-use phase

Self-tapping screws can generally be dismantled again from all applications and thus be fed into the recycling process. Direct reuse would theoretically be possible, but is not recommended, as the slide coating can be destroyed by the initial screw-in process and the function of the fastener can no longer be guaranteed after repeated use.

2.15 Disposal

The self-tapping screws can be disposed of separately (by appropriate dismantling) or directly with the installed elements during demolition. These are fed into the recycling process in accordance with the applicable disposal guidelines. The waste code for screws made of corrosion-resistant stainless steel and bi-metal screws is 170407 and for screws made of steel 170405 (*EWC*).

2.16 Further information

Further information can be found at www.ejot.de or in the approvals, standards and specialist rules and installation guidelines already mentioned.

3. LCA: Calculation rules

3.1 Declared Unit

1 kg average self-tapping screws made of stainless steel as a "worst case".

Declared unit

Name	Value	Unit
Declared unit	1	kg/m^2
Conversion factor to 1 kg	1	-
The yield	0.02-0.2	kg/m^2

3.2 System boundary

Type of EPD: Cradle to factory gate - with options. The environmental product declaration refers to the production stage (modules A1-A3), the disposal stage (modules C1-C4) and credits and loads outside the system boundary (module D).

The production stage includes the provision and processing of raw materials, transport to the manufacturer and production (incl. provision of energy, provision of water, provision of auxiliary materials, disposal of waste).

The disposal stage describes 97 % recycling of the screws incl. dismantling (module C1) and transport (module C2). For dismantling (module C1), removal using a cordless screwdriver is assumed. Module C2 includes transport to waste treatment. Here, transport by lorry over 100 km is assumed. In module C3, the recycling of construction waste is modelled as well as the landfilling of the 3 % that are not recycled. Potential credits from the recycling potential are shown in module D.

3.3 Estimates and assumptions

For unknown chemicals, a data set for surface pretreatment was used (up to max. 30 % mass fraction). Emulsion was estimated with glycerin. It was assumed for the EPD that the sealing washers are completely made of stainless steel, i.e. the EPDM content was estimated with stainless steel.

3.4 Cut-off criteria

It can be assumed that the sum of the neglected processes does not exceed 5 % of the impact categories. Machinery, equipment and infrastructure required in manufacturing are neglected.

3.5 Background data

In principle, the background database *GaBi* in the latest version 10.0 (Content Version 2020.2) was used. If no suitable data sets were available in the *GaBi* background database, data sets from the *ecoinvent* database were used. The available data sets also support the evaluation period with regard to the potential environmental impacts of 100 years.

3.6 Data quality

As part of the update of the EPD, the data originally collected and checked for plausibility from 2012 was adopted. The primary data were provided by the company EJOT Baubefestigungen GmbH. The quality and representativeness of the collected data can therefore be considered high.
The data quality of the background data used was rated as good in terms of technical, geographical and temporal representativeness. The majority of the

background data used comes from the reference year 2019.

3.7 Period under review

The data basis of this LCA is based on data collected in 2012. The period under consideration is 12 months. The validity of the data basis from 2012 was confirmed by the manufacturer as part of the update of the environmental product declaration.

3.8 Allocation

The production data was modelled according to the annual volume of stainless steel screws. No allocation took place, as only the production of stainless steel screws is considered in this EPD. Of the steel scrap from production and end-of-life that accumulates in the system, credits are awarded, but only for the calculated net scrap quantity.

3.9 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account.

The background database used is *GaBi* 10.0, Content Version 2020.2.

4. LCA: Scenarios and additional technical information

Characteristic product properties
Information on biogenic Carbon

Information describing the biogenic carbon content at the factory gate

The biogenic carbon content of the unpackaged product is less than 5 %.

Name	Value	Unit
Biogenic carbon content in accompanying packaging	0.1	kg C

End-of-life (C1-C4)

Name	Value	Unit
Collected separately waste type: stainless steal	1	kg
Collected as mixed construction waste	0	kg
Reuse	0	kg
Landfilling	0.03	kg
Recycling	0.97	kg
Energy recovery	0	kg

Reuse, recovery and recycling potential (D), relevant scenario information

The balance includes the end-of-life of the declared products at the end of the use phase. For net scrap resulting from the screws, a credit is awarded in module D. The scrap quantities are entered in the table.

Name	Value	Unit
Collection rate	100	%
Stainless steel scrap credit (module D)	0.347	kg

5. LCA: Results

In the following, the results of the indicators of impact assessment, resource use as well as waste and other output flows related to 1 kg of average thread forming stainless steel screws are presented as a "worst case" for self-tapping screws.

Important notice:
EP-freshwater: This indicator was calculated as "kg P-eq." in accordance with the characterisation model (EUTREND model, Struijs et al., 2009b, as implemented in ReCiPe; http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml).

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; ND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	ND	ND	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 kg self-tapping screws

Core Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Global warming potential - total	[kg CO_2-Eq.]	5.58E+0	3.35E-2	8.63E-3	2.61E-3	0.00E+0	-1.96E+0
Global warming potential - fossil fuels	[kg CO_2-Eq.]	5.57E+0	3.36E-2	8.56E-3	2.60E-3	0.00E+0	-1.96E+0
Global warming potential - biogenic	[kg CO_2-Eq.]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
GWP from land use and land use change	[kg CO_2-Eq.]	8.09E-3	4.86E-5	6.98E-5	1.78E-5	0.00E+0	-5.20E-3
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	2.27E-8	7.38E-16	1.58E-18	6.30E-18	0.00E+0	-1.24E-15
Acidification potential, accumulated exceedance	[mol H^+-Eq.]	3.10E-2	7.41E-5	5.25E-5	2.55E-5	0.00E+0	-1.20E-2
Eutrophication, fraction of nutrients reaching freshwater end compartment	[kg P-Eq.]	1.48E-5	8.96E-8	2.63E-8	7.57E-9	0.00E+0	-2.82E-6
Eutrophication, fraction of nutrients reaching marine end compartment	[kg N-Eq.]	4.11E-3	1.65E-5	2.54E-5	1.24E-5	0.00E+0	-1.72E-3
Eutrophication, accumulated exceedance	[mol N-Eq.]	4.43E-2	1.73E-4	2.81E-4	1.36E-4	0.00E+0	-1.86E-2
Formation potential of tropospheric ozone photochemical oxidants	[kg NMVOC-Eq.]	1.22E-2	4.51E-5	4.90E-5	3.61E-5	0.00E+0	-5.24E-3
Abiotic depletion potential for non-fossil resources	[kg Sb-Eq.]	2.59E-4	9.71E-9	6.98E-10	2.85E-9	0.00E+0	-2.87E-6
Abiotic depletion potential for fossil resources	[MJ]	6.87E+1	5.90E-1	1.15E-1	5.08E-2	0.00E+0	-2.39E+1
Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	[m^3 world-Eq deprived]	9.43E-1	7.31E-3	8.41E-5	5.01E-4	0.00E+0	-7.97E-1

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 kg self-tapping screws

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Renewable primary energy as energy carrier	[MJ]	1.54E+1	2.61E-1	6.66E-3	3.78E+0	0.00E+0	-4.48E+0
Renewable primary energy resources as material utilization	[MJ]	3.78E+0	0.00E+0	0.00E+0	-3.78E+0	0.00E+0	0.00E+0
Total use of renewable primary energy resources	[MJ]	1.92E+1	2.61E-1	6.66E-3	3.66E-3	0.00E+0	-4.48E+0
Non-renewable primary energy as energy carrier	[MJ]	6.88E+1	5.90E-1	1.16E-1	5.08E-2	0.00E+0	-2.39E+1
Non-renewable primary energy as material utilization	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Total use of non-renewable primary energy resources	[MJ]	6.88E+1	5.90E-1	1.16E-1	5.08E-2	0.00E+0	-2.39E+1
Use of secondary material	[kg]	7.40E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	3.47E-1
Use of renewable secondary fuels	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of non-renewable secondary fuels	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Use of net fresh water	[m^3]	3.13E-2	3.02E-4	7.76E-6	1.43E-5	0.00E+0	-3.27E-2

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 kg self-tapping screws

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	[kg]	1.48E-7	2.44E-10	5.35E-9	1.33E-9	0.00E+0	-2.19E-4
Non-hazardous waste disposed	[kg]	7.10E-1	4.18E-4	1.83E-5	1.37E-5	0.00E+0	2.15E-2
Radioactive waste disposed	[kg]	2.42E-3	8.95E-5	2.13E-7	6.71E-7	0.00E+0	-1.56E-4
Components for re-use	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Materials for recycling	[kg]	1.17E-1	0.00E+0	0.00E+0	9.70E-1	0.00E+0	0.00E+0
Materials for energy recovery	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Exported electrical energy	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
Exported thermal energy	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 kg self-tapping screws

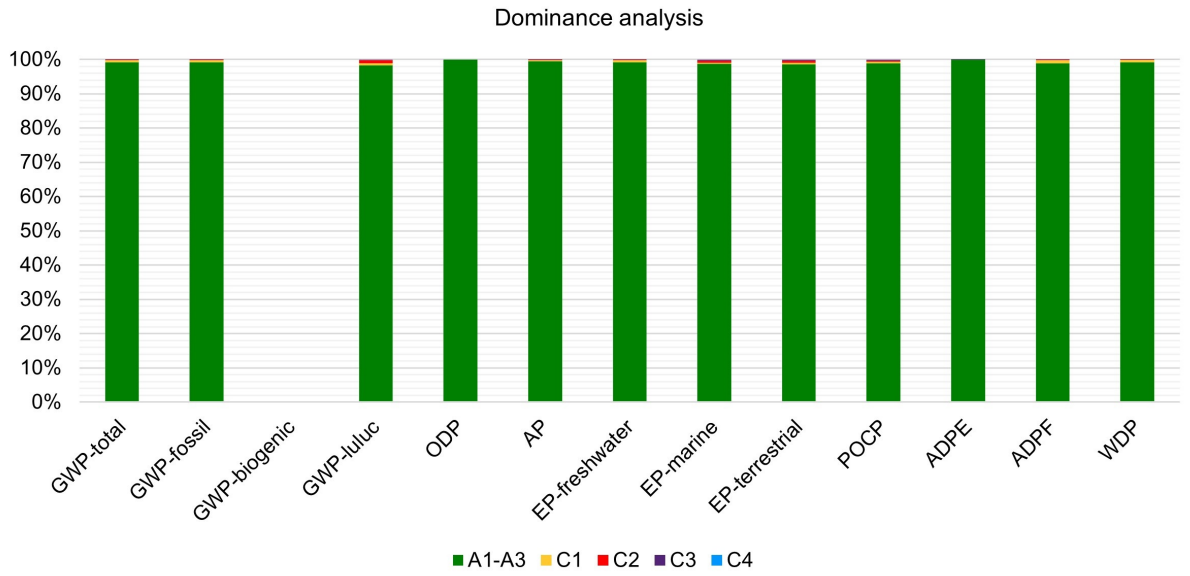
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Potential incidence of disease due to PM emissions	[Disease Incidence]	ND	ND	ND	ND	ND	ND
Potential Human exposure efficiency relative to U235	[kBq U235-Eq.]	ND	ND	ND	ND	ND	ND
Potential comparative toxic unit for ecosystems	[CTUe]	ND	ND	ND	ND	ND	ND
Potential comparative toxic unit for humans - cancerogenic	[CTUh]	ND	ND	ND	ND	ND	ND
Potential comparative toxic unit for humans - not cancerogenic	[CTUh]	ND	ND	ND	ND	ND	ND
Potential soil quality index	[-]	ND	ND	ND	ND	ND	ND

The additional indicators according to *EN 15804+A2* are optional. The indicators are not shown in the EPD ("ND").

Disclaimer 1 - applies to the indicator: Potential Human exposure efficiency relative to U235 (IR)
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 norradioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 - applies to the indicators: Abiotic depletion potential for non-fossil resources (ADPE), Abiotic depletion potential- Fossil Fuels (ADPF), Water Depletion Potential (WDP), Potential Comparative Toxic Unit for ecosystems (ETP-fw), Potential Comparative Toxic Unit for humans - cancerogenic (HTP-c), Potential Comparative Toxic Unit for humans - not cancerogenic (HTP-nc), Potential Soil Quality Index (SQP). 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 experience with the indicator.

6. LCA: Interpretation



All indicators are significantly dominated by the production stage and the material and energy upstream chains (modules A1-A3). In modules A1-A3, stainless steel and energy consumption in particular contribute to the potential environmental impacts.
Global warming potential fossil (GWP-fossil) is dominated by stainless steel (63 %) and electricity (25 %).
The stratospheric ozone depletion potential (ODP) is 84 % influenced by the packaging cartons.
The acidification potential of soil and water (AP) is dominated by stainless steel (88 %).
Eutrophication potential freshwater (EP-freshwater) is mostly influenced by electricity (39%), emulsion (29%) and stainless steel (29%) data sets.
Eutrophication potential saltwater (EP-marine) and eutrophication potential land (EP-terrestrial) are dominated by the stainless steel (71% and 73% respectively). The formation potential for tropospheric ozone (POCP) and the abiotic depletion potential for non-fossil resources (ADPE) are dominated by the stainless steel (76 % and 100 % respectively).
The abiotic depletion potential for fossil fuels (ADPF) is most influenced by stainless steel (59 %) and electricity (25 %).
The water deprivation potential (WDP) indicator is dominated by the stainless steel dataset (83 %).
The total use of renewable primary energy (PERT) indicator is most influenced by electricity (53 %) and stainless steel (36 %).
Total use of non-renewable primary energy (PENRT) is influenced by the data sets for stainless steel (61 %) and electricity (26 %).

7. Requisite evidence

No evidence according to PCR is required for this EPD.

8. References

Standards

EN 10020
DIN EN 10020:2000-07, Definition and classification of grades of steel.

EN 13501-1
DIN EN 13501-1:2019-05, Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests.

EN 15804
DIN EN 15804:2020-03, Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.

ISO 14001
DIN EN ISO 14001:2015, Environmental management systems - Requirements with instructions for use.

ISO 14025
DIN EN ISO 14025:2006-07, Environmental labels and declarations - Type III environmental declarations - Principles and procedures.

ISO 14040
DIN EN ISO 14040:2021-02 Environmental management - Life cycle assessment - Principles and framework.

ISO 14044
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