ENVIRONMENTAL PRODUCT DECLARATION

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

Owner of the Declaration	fischerwerke GmbH & Co. KG
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
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Issue date	28/05/2025
Valid to	27/05/2030

fischer cast-in anchor channel systems

fischerwerke GmbH & Co. KG

Institut Bauen und Umwelt e.V.

ECO PLATFORM EPD VERIFIED

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1. General Information

fischerwerke GmbH & Co. KG

Programme holder

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

Declaration number

EPD-FIW-20250019-IBK1-EN

This declaration is based on the product category rules:

Thin walled profiles and profiled panels of metal, 01/08/2021
(PCR checked and approved by the SVR)

Issue date

28/05/2025

Valid to

27/05/2030

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

Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

fischer cast-in anchor channel systems

Owner of the declaration

fischerwerke GmbH & Co. KG
Klaus-Fischer-Straße 1
72178 Waldachtal
Germany

Declared product / declared unit

The declared unit is one metre of cast-in anchor channel system with a weight of 6.16 kg per metre

Scope:

The results declared in this document are based on the product FES-H-52/34 with FBC-50/30 bolts with a weight of 6.16 kg per metre, which is the representative type of all FES cast-in anchor channel systems series and Innolock FES series.

FES cast-in anchor channel systems consist of mounted anchors on the channel back with T-bolt set. These anchors are formed as round bolt anchors or as I- anchors. The anchors are mounted on the channel back by riveting or welding process. The whole cast-in anchor channel systems are Hot-dipped galvanized. The inner section of channel is filled by PE foam, covered by end cap and tear strips, to prevent the entry of concrete slurry during casting.

Most of FES series are produced in China, and all Innolock FES series are produced in Vietnam.

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

Sr Lucas Berman,
(Independent verifier)

2. Product

2.1 Product description/Product definition

The product portfolio of fischer anchor channels is comprised of FES cast-in anchor channel systems series and Innolock FES series with corresponding channel bolts.

FES cast-in channel systems have three forms

- Cold-formed cast-in channel systems
- Non-serrated hot rolled Cast-in Channel Systems
- Serrated hot rolled Cast-in Channel Systems

Corresponding channel T-bolt also have three forms:

- Standard channel bolt
- Notched channel bolt
- Serrated channel bolt

FES cast-in anchor channel systems additionally consist of mounted anchors on the channel back with a T-bolt set. These anchors are formed as round bolt anchors or as I- anchors. The anchors are mounted on the channel back by riveting or welding process. The whole cast-in anchor channel systems are hot-dipped galvanized.

The inner section of the channel is filled by PE foam, covered by end cap and tear strips, to prevent the entry of concrete slurry during casting.

The various fischer channels differ in terms of mass in relation to running metres. The declared representative product is the cast-in anchor channel system FES-H-52/34 with FBC-50/30 bolts with a weight of 6.16 kg/m. The chosen representative product is based on the greatest proportion of product yield. Additionally, regarding two series of system products, FES-H/FES-H-S are produced in both China and Vietnam, and FES-RS-S is only produced in Vietnam. Thus, the FES-H series is chosen for representativeness.

The LCA results can be applied to the following fischer cast-in anchor channel systems:

- FES-C-28/15
- FES-C-38/17
- FES-C-40/25
- FES-C-49/30
- FES-C-54/33
- FES-H-2R-52/34
- FES-H-40/22
- FES-H-40/22-P
- FES-H-50/30
- FES-H-50/30-P
- FES-H-52/34
- FES-H-I-40/22
- FES-H-I-50/30
- FES-H-I-52/34
- FES-H-S-29/20
- FES-H-S-38/23
- FES-RS-S-500
- FES-RS-S-600
- FES-RS-S-700

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. Products with an ETA need a declaration of performance and the CE-marking. For the application and use the respective national provisions apply.

2.2 Application

The fischer cast-in anchor channel systems are engineered to safely transfer substantial loads to steel frameworks as well as to both reinforced and non-reinforced concrete elements.

Cast-in anchor channels are integrated into the concrete structure. Before the concrete is poured, these channels are set in place within the component and secured to the formwork, reinforcement bars, or by using specialized auxiliary structures. The fischer channels are designed to facilitate the attachment of fixtures at a later stage.

Common uses for these channels encompass securing curtain wall facades, attaching elevator components within hoistways, securing overhead wiring, installing utility pipes and cables in tunnels, mounting handrails, platforms, or seating, linking prefabricated concrete sections, and providing support for pipe structures, as well as various applications within installation technology.

2.3 Technical Data

The various geometric measurements, specific product details, and the static load-bearing capabilities for the FES cast-in anchor channel systems are detailed in the following technical specifications:

- *ETA-18/0862*
- *ICC-ESR 1990 by ICC ES*

Certain models of cast-in anchor channels have also received approval for withstanding fatigue from cyclic tension loads, seismic forces, and fire exposure. For a comprehensive design of these anchor channels and additional information pertinent to specific application scenarios, please consult the corresponding approval documents.

Technical constructional data of FES-H-52/34

Name	Value	Unit
Thread	M10-M20	
Minimum anchoring depth/ hef,min	155	mm
Minimum edge distance/cmin	100	mm
Minimum concrete thickness/hnom,min	160	mm
Anchor channel width/bch	52.5	mm
Anchor channel height/hch	34	mm
Profile thickness/t	4	mm

The product's performance data, as declared, in accordance with the declaration of performance with respect to its essential characteristics according to the respective ETA.

2.4 Delivery status

The fischer cast-in anchor channels and channel bolts are individually packaged and are also available for separate purchase.

2.5 Base materials/Ancillary materials

Name	Value	Unit
Channel profile	84	%
Channel anchor	8	%
Channel bolt set	7	%
Channel filler	1	%

The weight of FES-H-52/34 is 6.16 kg per metre.

Candidate List of Substances of Very High Concern for Authorisation (SVHC) is part of the formulation with a mass percentage of > 0.1 of the mass of the construction product: no.

This product/at least one partial article contains other carcinogenic, mutagenic, reprotoxic (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

The fischer cast-in anchor channels are made of cold-formed or hot-rolled channel profiles. The anchors are mounted on the channel back by a riveting or welding process. The fischer cast-in anchor channels with riveted bolt anchors are produced at Taicang and Vietnam factories.

The anchor channels made of carbon steel are hot-dipped galvanised after the mounting process of the anchors. The filler and other protective materials are assembled after the galvanising process. The HDG process is plated by suppliers.

The manufacturing process of fischer cast-in anchor channel systems mainly includes steel cutting, punching riveting and packaging, which involves raw materials, energy, water, and emissions during the process.

Most of the FES series are produced in China, and all Innolock FES series are produced in Vietnam.

2.7 Environment and health during manufacturing

Adherence to environmental and energy management criteria, as well as health and safety standards at work, is in compliance with all legal requirements and fischer specifications.

- *DIN EN ISO 14001*
- *ISO 9001*

Consistent manufacturing and the maintenance of product quality in line with FES cast-in anchor channel systems specifications and approval criteria are safeguarded through ongoing quality assurance by fischer, complemented by periodic third-party audits. All waste materials, including steel, PE foam, wood (such as pallets), and packaging (like cardboard) generated during production or left over, are systematically sorted and recycled by material type.

2.8 Product processing/Installation

The fischer cast-in anchor channel systems supply as pre-fabricated channel elements ready for installation. The fischer cast-in anchor channels can be placed into the building shell or at the precast concrete facility either during or after the reinforcement stage, without requiring lifting devices. These channels are then fixed within the component, attached to the formwork, reinforcement, or with suitable auxiliary structures, and are locked in place to prevent movement during the subsequent concrete pouring process. Typically, after the installation and concrete casting, the foam used for protection is removed and disposed of.

There are no special environmental precautions required when handling fischer cast-in channels.

2.9 Packaging

The fischer cast-in channels are shipped in bundles as long items, carefully packed and secured with straps. For lengths up to 1.05 meters, these channels are dispatched on Euro pallets or wrapped in cardboard. The fischer channel bolts, depending on their dimensions and length, are packed in various-sized packaging units in cardboard boxes. It is recommended that all used packaging materials are sorted by type and recycled accordingly.

2.10 Condition of use

All materials provided are safeguarded against external factors while installed and are designed for the service life of the associated construction project.

2.11 Environment and health during use

When utilized according to the intended purpose, the products have no effects on the environment or health. Proper use ensures that there is no adverse impact on water, air, or soil quality.

2.12 Reference service life

A minimum service life of 50 years, as confirmed by approval procedures, is guaranteed for FES cast-in anchor channel systems, provided that they align with the safety concepts detailed in Eurocode or ACI.

However, the actual service life is likely to extend well beyond this period. This service life is predicated on the use of the fischer cast-in anchor channel systems strictly for their intended applications, in compliance with the designed application. It refers to a static design approach and not to the reference service life as *ISO 15686*.

The product's aging process, when used in accordance with technological rules, is influenced by factors such as exposure to environmental elements, load-bearing conditions, and material durability.

These factors are taken into account in the design and approval process to ensure the product's longevity and reliability over its intended service life.

2.13 Extraordinary effects

Fire

The fischer cast-in anchor channel systems are classified to class A1 according to *EN 13501*.

Fire protection

Name	Value
Building material class	A1
Burning droplets	
Smoke gas development	

Water

The fischer cast-in anchor channel systems that are declared consist of hot-dipped galvanized and steel materials. There are no environmental risks attributable to the effects of water.

Mechanical destruction

In the event of unintentional mechanical destruction, if the product has been installed correctly, there is no risk for users or the environment.

2.14 Re-use phase

The fischer cast-in anchor channel systems cannot be re-used. However, the material can be recycled.

All elements of the product are recyclable and can be reintegrated into the material cycle.

To facilitate an efficient recycling process, it is essential to ensure that the separation of materials is feasible during the decommissioning phase.

2.15 Disposal

The disposal of non-recycled parts of fischer cast-in anchor channel systems can be disposed of at any waste disposal site with the appropriate waste number *EWC 191001* (for steel components) or *EWC 170904* (other components) according to the *European Waste Code* of the European Waste Catalogue.

2.16 Further information

www.fischer-international.com

3. LCA: Calculation rules

3.1 Declared Unit

The declared unit is 1 metre of cast-in anchor channel system. The conversion factor to 1 kg is 7850kg/m3 (steel).

Declared unit

Name	Value	Unit
Declared unit	1	rm
linear density	6.16	kg/rm

Most of the production happens in China. Specific data from fischer production facility in China is recorded for the LCA.

3.2 System boundary

This study of fischer cast-in anchor channel systems includes life cycle information from cradle to gate with options, modules A4-A5, C1-C4 and module D.

- A1-A3: Product stage (raw material supply and processing, transport of raw material to the manufacturer and manufacturing of FES-H 52/34 with FBC-50/30 bolts);
- A4: Transport to the construction site;
- A5: Disposal of packaging after installation;
- C1-C4: End-of-life stage (deconstruction, transport to waste processing, waste processing and disposal);
- D: Material recovery potentials from metal recycling and energy recovery potentials from the thermal recovery of the mixed plastic waste.

3.3 Estimates and assumptions

- Transport assumptions are made where it is not possible to obtain the specific data. When this occurs, it is clearly stated in the report and a sensitivity analysis is conducted;
- During the end of life stage, the transportation of the waste FES cast-in anchor channel systems from the operation site to treatment facilities such as dismantling site and disposal facilities is assumed to be 100 km for simplification and a sensitivity analysis is conducted;

3.4 Cut-off criteria

- All inputs and outputs to a (unit) process will be included in the calculation for which data is available. Data gaps may be filled by conservative assumptions with average or generic data. Any assumptions for such choices will be documented;
- According to PCR, life cycle inventory data shall, according to *EN 15804*, include a minimum of 95 % of total inflows (mass and energy) per module. In addition, if less than 100 % of the inflows are accounted for, proxy data or extrapolation should be used to achieve 100 % completeness.

3.5 Background data

For the modelling and calculation, the LCA-software *SimaPro 9.6* is used.

The underlying database is *Ecoinvent 3.10*.

3.6 Data quality

Steps were taken to ensure that the LCI data were reliable and representative. The type of data that was used is clearly stated in the Inventory Analysis, be it measured or calculated from primary sources or whether data are from the LCI databases. In this study, generic data for certain processes were sourced from the databases in *SimaPro*. Due to confidentiality reasons, information received from the supplier and confirmed by fischer is only used for supporting modelling and not revealed in any other circumstance.

3.7 Period under review

The period under review is the year 2023.

3.8 Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product´s lifespan: Global

3.9 Allocation

Allocation refers to the partitioning of input or output flows of a process or a product system between the product systems under study and one or more other product systems.

In the production of cast-in anchor channels, special production is used because all the inputs and outputs are clearly corresponding to the products, there is no production of by-products that need to be used to allocate the situation.

For the allocation of residuals, the model 'allocation cut-off by classification' (ISO standard) is used. The underlying philosophy of this approach is that primary (first) production of materials is always allocated to the primary user of a material. If material is recycled, the primary producer does not receive any credit for the provision of any recyclable materials. Consequently, recyclable materials are available burden-free for recycling processes, and secondary (recycled) materials bear only the impacts of the recycling processes.

As for the end-of-life stage of the cast-in anchor channels, following the PCR's recommendation on end-of-life scenario of reuse, recycling, and recovery. Along with the benefit, the load from waste treatment for recycling purposes such as crushing and melting, etc., is also allocated to the next life cycle of substituted products, but not the primary producers, hence no burden or benefit will be allocated to the primary producer of the steel (cut-off approach).

3.10 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 used database is *Ecoinvent 3.10*.

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

There are two kinds of packaging materials: cartons and wood pallets. According to the data from *Ecoinvent 3.10*, the amount of biogenic carbon uptake of cartons is 0.45kg C per kg and wood pallet is 0.47kg C per kg. On account of the consumption of the packaging material of the product, the amount of biogenic carbon contained within the packaging material of the

product is 0.042 kg.

And after checking the product substance list, there is no material which contains biomass used in fischer cast-in anchor channel systems products.

Information on describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	-	kg C
Biogenic carbon content in accompanying packaging	0.042	kg C

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO_2.

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel	31.11	l/100km
Transport distance (Market in China)	100 (79.12%)	km
Capacity utilisation (including empty runs)	50	%
Capacity utilisation volume factor	0.4	-
Transport distance (Market Overseas)	10000 (20.88%)	km

Installation into the building (A5)

Module A5 includes the treatment and disposal of packaging materials.

Name	Value	Unit
Output substances following waste treatment on site (pallets and cartons)	0.0886	kg
Waste transport distance	100	km

End of life (C1-C4)

The product dismantling from the building is done with a machine.

Name	Value	Unit
Recycling	6.115	kg
Energy recovery	0.045	kg

Reuse, recovery and/or recycling potentials (D), relevant scenario information

Collection rate is 100 %

5. LCA: Results

As a general rule, a comparison or evaluation of EPD data is only possible when all of the data records to be compared have been drawn up in accordance with *EN 15804* and the building context and/or product-specific performance characteristics are taken into consideration.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = 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	X	X	MND	MND	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: FES-H-52/34 with FBC-50/30 bolts with a weight of 6.16 kg/m

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq	1.07E+01	2.26E-01	1.72E-03	9.42E-04	1.19E-01	1.39E-01	0	-4.81E+00
GWP-fossil	kg CO_2 eq	1.08E+01	2.26E-01	4.34E-02	9.41E-04	1.19E-01	1.39E-01	0	-4.8E+00
GWP-biogenic	kg CO_2 eq	-1.36E-01	3.24E-05	2.7E-07	2.34E-07	1.87E-05	8.42E-07	0	-7.79E-03
GWP-luluc	kg CO_2 eq	5.53E-03	1.07E-04	6.91E-07	2.13E-07	4.79E-05	3.49E-07	0	-2.7E-03
ODP	kg CFC11 eq	5.52E-08	3.29E-09	2.56E-11	5.6E-11	1.77E-09	1.89E-11	0	-8.54E-09
AP	mol H^+ eq	4.55E-02	4.25E-03	7.18E-06	4.46E-06	4.97E-04	1.77E-05	0	-2.38E-02
EP-freshwater	kg P eq	3.94E-03	1.16E-05	1.35E-07	4.83E-08	9.36E-06	1.82E-07	0	-2.25E-03
EP-marine	kg N eq	1.04E-02	1.1E-03	2.62E-06	6.42E-07	1.81E-04	8.61E-06	0	-6.01E-03
EP-terrestrial	mol N eq	1.03E-01	1.22E-02	2.85E-05	6.85E-06	1.98E-03	9.1E-05	0	-5.07E-02
POCP	kg NMVOC eq	3.47E-02	3.43E-03	9.93E-06	7.72E-06	6.88E-04	2.25E-05	0	-1.71E-02
ADPE	kg Sb eq	6.22E-05	4.31E-07	5.55E-09	6.92E-10	3.85E-07	2.83E-09	0	-1.62E-05
ADPF	MJ	1.12E+02	2.94E+00	2.43E-02	5.53E-02	1.68E+00	1.34E-02	0	-4.5E+01
WDP	m^3 world eq deprived	2.62E+00	9.69E-03	1.09E-04	5.41E-05	7.57E-03	7.73E-04	0	-2.3E+00

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential)

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: FES-H-52/34 with FBC-50/30 bolts with a weight of 6.16 kg/m

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	5.92E+00	2.95E-02	1.3E+00	1.46E-04	2.22E-02	3.12E-04	0	-3.31E+00
PERM	MJ	1.3E+00	0	-1.3E+00	0	0	0	0	0
PERT	MJ	7.22E+00	2.95E-02	3.2E-04	1.46E-04	2.22E-02	3.12E-04	0	-3.31E+00
PENRE	MJ	5.54E+01	2.02E-01	2.35E-03	8.68E-04	1.63E-01	1.75E+00	0	-3.61E+01
PENRM	MJ	1.76E+00	0	0	0	0	-1.75E+00	0	0
PENRT	MJ	5.71E+01	2.02E-01	2.35E-03	8.68E-04	1.63E-01	2.59E-03	0	-3.61E+01
SM	kg	2.62E+00	0	0	0	0	0	0	0
RSF	MJ	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0
FW	m^3	9.96E-02	2.98E-04	3.3E-06	1.6E-06	2.28E-04	2.51E-05	0	-7.56E-02

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

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: FES-H-52/34 with FBC-50/30 bolts with a weight of 6.16 kg/m

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	4.2E-04	1.74E-05	1.68E-07	3.91E-07	1.16E-05	2.09E-07	0	-1.98E-04
NHWD	kg	1.25E+00	6.51E-02	1.14E-03	1.98E-05	7.92E-02	7.81E-04	0	-9.5E-01
RWD	kg	9.68E-05	4.45E-07	4.87E-09	2.77E-09	3.38E-07	3.73E-09	0	-4.09E-05
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	5.86E-01	0	0	0	0	6.12E+00	0	0

MER	kg	0	0	0	0	0	0	0	0
EEE	MJ	4.17E-03	0	0	0	0	2.45E-01	0	0
EET	MJ	4.46E-03	0	0	0	0	4.6E-01	0	0

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: FES-H-52/34 with FBC-50/30 bolts with a weight of 6.16 kg/m

Parameter	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	Disease incidence	8.4E-07	1.16E-08	1.4E-10	4.14E-11	9.72E-09	7.74E-11	0	-6.24E-07
IR	kBq U235 eq	3.97E-01	1.82E-03	1.99E-05	1.15E-05	1.38E-03	1.49E-05	0	-1.68E-01
ETP-fw	CTUe	2.82E+02	1.26E+00	1.29E-02	7.34E-03	8.92E-01	6.07E-02	0	-2.28E+02
HTP-c	CTUh	4.74E-07	2.09E-09	1.79E-11	7.52E-12	1.24E-09	3.55E-11	0	-3.98E-07
HTP-nc	CTUh	9.67E-07	2.43E-09	3.02E-11	9.34E-12	2.09E-09	3.95E-10	0	-7.99E-07
SQP	SQP	3.07E+01	9.17E-01	1.45E-02	3.59E-03	1E+00	3.48E-03	0	-1.65E+01

PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

Disclaimer 1 – for the indicator “Potential Human exposure efficiency relative to U235”. 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 or radioactive 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 – for the indicators “abiotic depletion potential for non-fossil resources”, “abiotic depletion potential for fossil resources”, “water (user) deprivation potential, deprivation-weighted water consumption”, “potential comparative toxic unit for ecosystems”, “potential comparative toxic unit for humans – cancerogenic”, “Potential comparative toxic unit for humans - not cancerogenic”, “potential soil quality index”. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

This EPD was created using a software tool.

6. LCA: Interpretation

A stage contribution analysis of cast-in anchor channel systems series on various impact categories reveals that production, transportation (oceanic and road) and end-of-life treatment of anchor channels are the main contributors to environmental impacts. The process contribution analysis reveals that steel, electricity consumption, and transportation contribute to most of the environmental impacts.

The biogenic global warming potential shows the absorption of atmospheric carbon dioxide during plant growth in connection with packaging (wooden pallets and wooden packaging).

In the EPD of multiple products, the difference between the LCIA result of GWP-total (A1-A3) is from -73 % to 14 %.

7. Requisite evidence

No evidence required.

8. References

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