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Global Program Operator

ENVIRONMENTAL PRODUCT DECLARATION

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

Owner of the Declaration	**Schöck Bauteile GmbH**
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
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Schöck Isokorb® (X)T type Q

Schöck Bauteile GmbH

Institut Bauen und Umwelt e.V.

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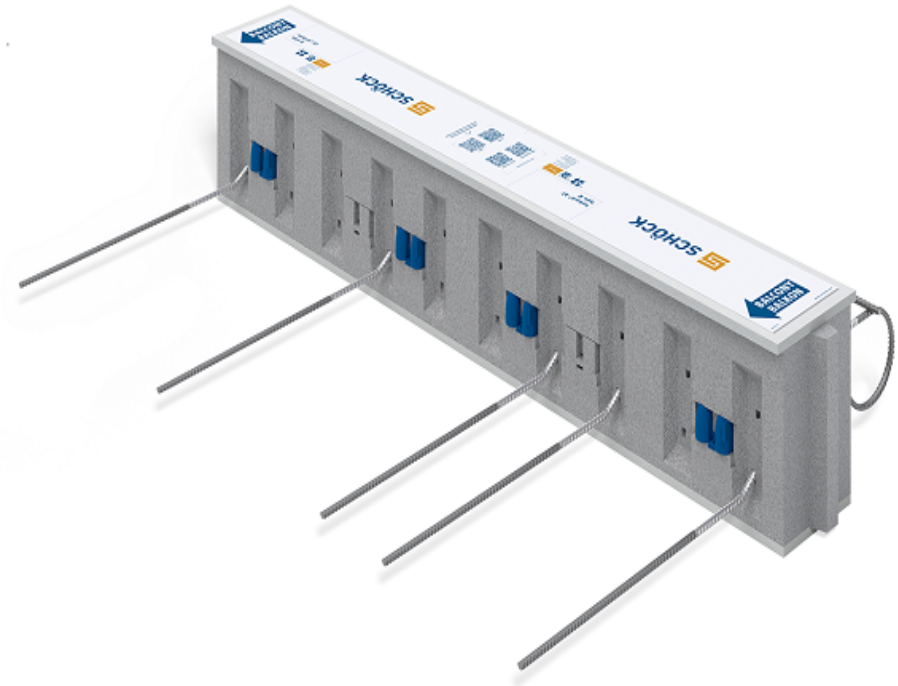


1. General Information

Schöck Bauteile GmbH

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

Declaration number
EPD-SBG-20210313-IBC1-EN

This declaration is based on the product category rules:
Load-bearing thermal insulation elements, 11.2017
(PCR checked and approved by the SVR)

Issue date
07.04.2022

Valid to
06.04.2027

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

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

Schöck Isokorb® (X)T type Q

Owner of the declaration
Schöck Bauteile GmbH
Schöckstraße 1
76534 Baden-Baden

Declared product / declared unit
1 m Schöck Isokorb® (X)T type Q

Scope:
The average EPD refers to the average load-bearing thermal insulation element from Schöck Bauteile GmbH – Schöck Isokorb® (X)T type Q. A total of 315 variants were considered and a weighted average was calculated from the production quantity.

The assembly of the pressure bearing pads required for Schöck Isokorb® (X)T type Q takes place at the Schöck plant in Landsberg (near Halle), while the assembly of the steel components required for Schöck Isokorb® (X)T type Q takes place at the Schöck plant in Baden-Baden. The final assembly of all required components takes place at the Schöck plant in Baden-Baden (DE), Essen (DE), Pucking (AT) or Tychy (PL), depending on the country of sale.

The results of the average EPD for the average Schöck Isokorb® (X)T type Q are applicable to all other standard variants of this Isokorb®. In addition, a detailed evaluation of the nine most common Isokorb® variants can be found in the appendix.

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

Dr. Stefan Diederichs
(Independent verifier)

2. Product

2.1 Product description/Product definition

Schöck Isokorb® (X)T type Q is a load-bearing thermal insulation element for creating thermal breaks between supported reinforced concrete components and the floor slab structure. It consists of a thermal insulation layer made of polystyrene rigid foam (Neopor®) together with a statically effective truss system made of welded steel bars (shear force rods) and a system of pressure bearing pads made of ultra-high strength concrete (HTE Compact pressure bearing pads) or steel. The forces are transferred to the adjoining structural components through bond stresses and surface pressure.

Schöck Isokorb® (X)T type Q is available in different insulation thicknesses and load capacities. Schöck Isokorb® XT type Q type Q has an insulation thickness of 120 mm, and Schöck Isokorb® T type Q has an insulation thickness of 80 mm. The load capacities are adjusted according to the required load. The number of shear force bars and steel or HTE Compact pressure bearing pads varies depending on the necessary load capacity. In addition, Schöck Isokorb® is available as

linear support (type Q) and as point support (type Q-P). The possible components and materials of Schöck Isokorb® (X)T type Q can be found in the technical information on the website www.schoeck.com.
The declared product is supplied in a fire protection version with fire safety boards attached at the factory to the top and bottom and has a fire resistance duration of 120 minutes (REI120).
The results of the average EPD for the average Schöck Isokorb® (X)T type Q are applicable to all other standard variants of this Isokorb®.
For its placing on the market in the EU/EFTA (with the exception of Switzerland), *Regulation (EU) no. 305/2011* applies. The product requires a declaration of performance taking into account *ETA-17/0261, February 2021*, for "Schöck Isokorb® with concrete pressure elements with insulating element thickness 80 and 120 mm" or *ETA-17/0262, January 2021,* for "Schöck Isokorb® with steel pressure elements with insulating element thickness 80 and 120 mm". The respective national regulations apply to its use.

2.2 Application

Schöck Isokorb® (X)T type Q is used for the static transfer of shear forces and is used in supported reinforced concrete structures such as balconies. It is arranged as a linear (type Q) or point support (type Q-P) in the thermal insulation layer (e.g. external insulation with external thermal insulation bonded system - ETICS) in such a way that the heat flows are minimised locally between the interior and exterior areas and thermal bridges are reduced.
Due to its thermally and statically optimised construction, Isokorb® ensures an effective thermal insulation performance, which is shown by the equivalent thermal transmission resistance (R_{eq}).

2.3 Technical Data

The exact technical data of the individual variants of Schöck® Isokorb (X)T type Q depend on the load capacity and can be found in the related technical information on the website www.schoeck.com.

Structural engineering data

Name	Value	Unit
Insulation thickness	80 und 120	mm
Concrete covering DIN 1045-1, EN 1992-1-1/NA	30 - 50	mm
Height	160 - 300	mm
Length	250 - 1000	mm
Shear force rods (number; diameter)	2 to 20 (Ø 6 to 14)	mm
HTE pressure bearing pads (number)	2 to 8	-
Fire resistance class EN 1365-2, EN 13501-2, DIN 4102-2, Z-15.7-240	120	-
Equivalent thermal conductivity λeq EN ISO 10211, EN ISO 6946, Z-15.7-240	0.031 - 0.312	W/(mK)
Thermal conductivity of the thermal insulation material Neopor EN 13163	0.031	W/(mK)
Moment resistance with C25/30 DIN 1045-1, EN 1992-1-1/NA	-	kNm/m
Shear resistance with C25/30 DIN 1045-1, EN 1992-1-1/NA	34 - 362.4	kN/m

Schöck Isokorb® (X)T type Q is designed to absorb shear forces as intended in the construction of connections and balconies. The moment load capacity is therefore not given. Performance values for the product according to the declaration of performance with regard to its essential features according to *ETA-17/0261, February 2021*, for "Schöck Isokorb® with concrete pressure elements with insulating element thickness 80 and 120 mm" or *ETA-17/0262, January 2021,* for "Schöck Isokorb® with steel pressure elements with insulating element thickness 80 and 120 mm".

2.4 Delivery status

Schöck Isokorb® (X)T type Q is manufactured with a length of 250 mm to 1000 mm and a height of 160 mm to 300 mm.

2.5 Base materials/Ancillary materials

The average product weight based on sales weight, in relation to the declared unit, is 7.57 kg.

Name	Value	Unit
Reinforcing steel B500	34,4	%
Cement-bound fire safety board	31,9	%
Stainless steel B500 NRR	13,5	%
HTE Compact pressure bearing pads (fine concrete)	10,1	%
Insulating material	6,0	%
Polystyrene (PS)	2,3	%
Hot-melt adhesive	1,4	%
Labels	0,5	%

The product/commodity/at least one sub-product contains substances on the ECHA list of Substances of Very High Concern (SVHC) (dated 04/04/2022) at more than 0.1 % by mass, which require approval: No.
The product/commodity/at least one sub-product contains other CMR substances in Category 1A or 1B that are not on the candidate list, at more than 0.1 % by mass in at least one sub-product: No.
Biocide products have been added to the building product in question or it has been treated with biocide products (it is thus a treated product as defined in the Biocidal Products Regulation (EU) No. 528/2012): No.

2.6 Manufacture

Processing primary materials

The primary material for the reinforcing steel-stainless steel connections in Schöck Isokorb® is wound as "metal wire" onto coils, delivered, uncoiled in special facilities, and straightened and cut to the required length or produced directly from the coil using recognised and certified welding processes on special automatic welding machines in the company's own production facility in Baden-Baden.
The shear force rods are bent on the company's own bending machines and fitted with a retaining clip.
The HTE Compact pressure bearing pad, made of high-density micro-fibre reinforced concrete, is cast in pre-cast forms, made of plastic, that serve as permanent formwork, at the factory in Landsberg in accordance with the formulas deposited with the

Deutsches Institut für Bautechnik (DIBt – the German institute for construction technology).

Final assembly
The materials required for the final assembly of Schöck Isokorb® types are both manufactured in-house and purchased from selected suppliers. Schöck Isokorb® types are assembled on special, type-specific production lines, which are set up based on specific customer orders. During final assembly at the Baden-Baden, Essen, Pucking or Tychy plants, the required components (shear force rod, pressure bearing pad, foam parts and fire safety boards) are joined together using mechanical connection technology and a special hot-melt adhesive according to the applicable production drawing and the corresponding quality regulations.

2.7 Environment and health during manufacturing

The criteria for environmental and energy management, and the requirements relating to health and safety in the workplace, are maintained in accordance with the certifications:

Occupational health and safety – production:
Occupational health and safety management in accordance with *BS OHSAS 18001.*

Environmental protection – production:
Environmental management in accordance with *ISO 14001.*
Energy management in accordance with *ISO 50001.*

Quality management - production:
Quality management in accordance with *ISO 9001.*

The company has been certified according to *ISO 9001* since 2006, *ISO 14001* since 2013 and *ISO 50001* since 2014, as well as being certified according to *BS OHSAS 18001* by DEKRA Certification GmbH.

Any waste, such as stainless steel, reinforcing steel , expanded polystyrene (EPS), plastics and wood (wooden pallets and wooden fittings), that occurs during the manufacture of the product, or that is left over as excess material, is separated, stored and recycled as far as is possible.

2.8 Product processing/Installation

Schöck Isokorb® (X)T type Q is supplied as a ready-to-install element; a tongue-and-groove system enables the elements to be arranged linearly flush with each other between the floor slab and the balcony slab. Where necessary, the linear variants can be cut to the required connection length using a standard hand saw. Isokorb® is placed in position in the building structure during or after the work of laying the floor or balcony slab formwork without the use of lifting tools, slid into place with the existing on-site reinforcement and secured against updrift during the subsequent concreting process.
No special measures to protect the environment need to be taken while machining Schöck Isokorb®.

2.9 Packaging

Schöck Isokorb®is stacked on wooden pallets with lateral wooden trim and is delivered either with or without a protective film wrapping depending on the country-specific requirements.

The individual packaging materials are separated and recycled. The wooden pallets are returned through the Interseroh scheme to authorised waste disposal companies.

2.10 Condition of use

Once installed, all materials used are protected against external exposure for their service life and are designed for the service life of the construction. If the products are used as intended, there is no danger to water, air or soil.

2.11 Environment and health during use

There are no detrimental effects on the environment or health during the use phase due to the integration of the product into the building structure.

2.12 Reference service life

Schöck Isokorb® (X)T type Q has a minimum service life of 50 years, confirmed through test scenarios, which corresponds to average building use and building design. However, the actual service life can be considerably longer. The service life complies with fatigue tests that simulate a service life of 50 years using load spectra (temperature, deformation, environmental influences) and are part of the approval by building authorities. A further precondition for the service life is that the necessary conditions for packaging, transport, storage, installation and use are met. This declared service life corresponds to the manufacturer's declaration and does not relate to a reference service life according to *ISO 15686.*

2.13 Extraordinary effects

Fire
The declared products that have a fire protection version have a fire resistance duration of 120 minutes according to the fire tests for the general construction authority certification and are classified in fire resistance class REI120 according to *EN 13501*.

Fire safety

Name	Value
Building material class	A1-A2
Burning droplets	S1
Smoke gas development	d0

Water
The use of stainless steels with the appropriate embedded length in the constructions to be connected eliminates the risk of corrosion. The materials used in Schöck Isokorb® (X)T type Q do not exhibit any chemical reaction with water, are not soluble in water, and do not release any substances which may pollute water.

Mechanical destruction
Not relevant.

2.14 Re-use phase

Demolition takes place together with the connected reinforced concrete inner slabs in the load-bearing construction. The steel components of the declared product can be recycled and reused. Care should be

taken to sort materials during demolition as far as possible to facilitate an efficient recycling process.

2.15 Disposal

The non-recyclable parts of Schöck Isokorb® (X)T type Q can be disposed of at any waste disposal site with the corresponding waste code number (according to the waste code from the *European Waste Catalogue* with list of wastes: 150106).

2.16 Further information

Other information on the product is available at www.schoeck.com.

3. LCA: Calculation rules

3.1 Declared Unit

The declaration refers to 1 m (linear metre) of the average sales-weighted load-bearing thermal insulation element of Schöck Bauteile GmbH – Schöck Isokorb® (X)T type Q.

Declared unit

Name	Value	Unit
Declared unit	1	piece/product
Running meter	1	m

3.2 System boundary

Type of EPD: cradle-to-gate – with options. The environmental product declaration refers to the production stage (A1–A3) and the disposal stage (C1–C4). The disposal of the packaging was considered in A5. The benefits/loads from the recovery and recycling potential are declared outside the system boundary in module D.

3.3 Estimates and assumptions

Assumptions are made with respect to the following raw materials/primary products: Microfibre (raw material: steel fibres, 0.4 M-%) and the material reinforcing steel B500B are assessed with reinforcing steel (wire), 100 % of which comes from recycled sources. The material hot-melt adhesive is estimated with EVA-based hot-melt adhesive.
The reuse rate of the pallets was assumed to be 90 %, with the remaining 10 % considered to be broken material and sent for incineration.
For the calculation of diesel consumption during the demolition of the product from a building, a worst case scenario with a product thickness of 120 mm and a height of 990 mm is used. The diesel consumption of 0.92 l/m^3 is based on the use of a hydraulic excavator (21.28 l/h) and a jackhammer with compressor (6.4 l/h) with a capacity of 30 m^3/h.

3.4 Cut-off criteria

All the given data taken from the operating data, i.e. all the basic materials in the formula, and the thermal and electrical energy used, are taken into account.

3.5 Background data

All background data used were taken from the *GaBi software* databases. The data sets contained in the *GaBi database* are documented online. To ensure the comparability of the results, only the consistent background data from the *GaBi database* were used in the LCA (e.g. data sets on energy, transport, and auxiliary and operating materials). It was only necessary to use an Ecoinvent data set for the material ilmenite.

3.6 Data quality

To model the product stage of Schöck Isokorb® (X)T type Q, the data collected by the company Schöck Bauteile GmbH for the production year 2020 were used. The background data are not older than ten years. The quality of the collected data can be considered to be high. A total of 315 variants were considered and a weighted average was calculated from the production quantity. Variability lies between -28 % and 1 % in relation to the GWP/kg. A high regional representativeness of the electricity is achieved by modelling the respective electricity mix for the Schöck plants in Baden-Baden (DE), Essen (DE), Pucking (AT) or Tychy (PL).

3.7 Period under review

The fundamental data for the life cycle assessment (LCA) presented here is based on data acquired during 2020. The period under review is 12 months.

3.8 Allocation

The 315 variants of Isokorb® (X)T type Q considered are manufactured at four different locations where other types are also produced. With regard to the allocation of the production data, it was therefore allocated according to the number of units produced. Joint products do not arise during production. Allocations in background data records are documented online in the GaBi database.
Stainless steel scrap that accumulates after the usage phase and in production is assumed to be recycled as secondary material. For this scrap, benefits are issued in Module D, but only for the calculated net scrap quantity. This benefit is based on the assumption that stainless steel production with scrap is a substitute for primary production. No benefits are issued for the reinforcing steel as it is assumed to be derived from secondary material and as such no primary material is avoided when recycling the product.

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 *GaBi database* version 10.5 (2021/2) was used to model the LCA. An Ecoinvent dataset was used for a material that was not available in the GaBi database.

4. LCA: Scenarios and additional technical information

Characteristic product properties
Information on biogenic Carbon
The biogenic carbon content quantifies the amount of biogenic carbon in the product leaving the factory gate. The total mass of biogenic-carbon-containing materials is found exclusively in the packaging. The packaging amounts to 2.01 kg for the sales-weighted average Isokorb. Data from the *Thünen Institute* was used to calculate the biogenic carbon.

Information to describe the biogenic carbon content at the factory gate

Name	Value	Unit
Biogenic Carbon Content in product	0	kg C
Biogenic Carbon Content in accompanying packaging	0.91	kg C

The following technical information is a basis for the declared modules or can be used for developing specific scenarios in the context of a building assessment.

Installation in the building (A5)

Name	Value	Unit
Packaging waste wooden boards	0,95	kg
Packaging waste wooden slats	0,30	kg
Packaging waste pallets	0,76	kg

The installation in the building was not considered, but the packaging disposal was.

Reference service life

Name	Value	Unit
Reference service life	50	a

End of life cycle (C1-C4)
Based on the data set of construction waste processing (C3), a material loss of 3 % at the time of pretreatment of the product is assumed as waste.

Name	Value	Unit
Collected as mixed construction waste	7.57	kg
Minus machining loss (-3 %)	7,35	kg
Recycling (steel and stainless steel)	3.51	kg
Landfilling (non-recyclable materials)	3.83	kg

Reuse, recovery and recycling potential (D), relevant scenario data
The process balance includes the end-of-life (EoL) of the declared product at the end of the usage phase. Due to the use of steel and stainless steel in the production of Schöck Isokorb® (X)T type Q, two metal scrap fractions are relevant in the EoL:

steel scrap and stainless steel scrap. The net scrap benefit for steel scrap is zero, as 100 % of the steel used in its manufacture comes from recycled sources. There is a net scrap benefit for stainless steel for the primary stainless steel (21 %) used in modules A1-A3. The total amount of stainless steel scrap is 0.99 kg, and 0.21 kg of this receives benefit as it corresponds to the primary material.

Name	Value	Unit
Collection rate	100	%
Net scrap quantity .– steel (without benefit)	2,52	kg
Net scrap quantity - stainless steel (21 % with benefit)	0,99	kg

SCHÖCK
Dependable by design

5. LCA: Results

EP-freshwater disclaimer: this indicator was calculated as "kg P eq" as required by the descriptive 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	X	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m Schöck Isokorb® (X)T type Q

Core Indicator	Unit	A1-A3	A5	C1	C2	C3	C4	D
GWP-total	[kg CO_2-Eq.]	6.99E+0	3.25E+0	5.08E-2	7.59E-2	1.99E-2	3.10E-1	-2.14E+0
GWP-fossil	[kg CO_2-Eq.]	1.03E+1	-6.92E-2	4.87E-2	7.52E-2	1.97E-2	3.10E-1	-2.13E+0
GWP-biogenic	[kg CO_2-Eq.]	-3.32E+0	3.32E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
GWP-luluc	[kg CO_2-Eq.]	1.48E-2	-4.99E-4	2.13E-3	6.21E-4	1.36E-4	0.00E+0	-4.49E-3
ODP	[kg CFC11-Eq.]	5.66E-8	-4.69E-16	1.18E-16	1.50E-17	5.11E-17	2.50E-11	-1.84E-14
AP	[mol H^+-Eq.]	4.29E-2	-1.96E-4	1.99E-4	4.55E-4	1.91E-4	4.13E-4	-8.27E-3
EP-freshwater	[kg P-Eq.]	7.21E-5	-3.11E-7	6.89E-7	2.26E-7	5.62E-8	1.26E-6	-3.91E-6
EP-marine	[kg N-Eq.]	8.41E-3	-1.23E-4	4.40E-5	2.22E-4	9.35E-5	1.17E-4	-1.40E-3
EP-terrestrial	[mol N-Eq.]	9.15E-2	-9.48E-4	5.69E-4	2.46E-3	1.03E-3	1.27E-3	-1.51E-2
POCP	[kg NMVOC-Eq.]	2.48E-2	-4.46E-4	1.58E-4	4.29E-4	2.73E-4	4.30E-4	-4.11E-3
ADPE	[kg Sb-Eq.]	1.96E-4	-1.01E-8	3.06E-8	6.73E-9	2.17E-8	2.16E-9	-1.99E-6
ADPF	[MJ]	1.67E+2	-1.06E+0	4.41E+0	1.01E+0	3.85E-1	7.49E-1	-2.85E+1
WDP	[m^3 world-Eq deprived]	1.48E+1	2.42E-1	1.30E-3	7.05E-4	3.69E-3	-6.05E-2	-4.95E-1

Caption	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: 1 m Schöck Isokorb® (X)T type Q

Indicator	Unit	A1-A3	A5	C1	C2	C3	C4	D
PERE	[MJ]	1.97E+1	2.80E+1	2.63E-1	5.82E-2	4.94E-2	5.56E-2	-7.00E+0
PERM	[MJ]	4.02E+1	-4.02E+1	0.00E+0	0.00E+0	-2.10E-2	0.00E+0	0.00E+0
PERT	[MJ]	5.99E+1	-1.22E+1	2.63E-1	5.82E-2	2.84E-2	5.56E-2	-7.00E+0
PENRE	[MJ]	1.26E+2	-1.06E+0	4.41E+0	1.02E+0	4.15E+1	7.49E-1	-2.85E+1
PENRM	[MJ]	4.11E+1	0.00E+0	0.00E+0	0.00E+0	-4.11E+1	0.00E+0	0.00E+0
PENRT	[MJ]	1.67E+2	-1.06E+0	4.41E+0	1.02E+0	3.86E-1	7.49E-1	-2.85E+1
SM	[kg]	3.57E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	2.17E-1
RSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	[m^3]	3.70E-1	5.44E-3	2.31E-4	6.67E-5	1.06E-4	-1.41E-3	-2.19E-2

Caption	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: 1 m Schöck Isokorb® (X)T type Q

Indicator	Unit	A1-A3	A5	C1	C2	C3	C4	D
HWD	[kg]	5.65E-4	-3.18E-9	1.86E-10	5.35E-11	2.15E-11	0.00E+0	-1.33E-4
NHWD	[kg]	2.35E-1	1.65E-2	7.45E-4	1.59E-4	1.03E-4	3.79E+0	5.58E-3
RWD	[kg]	5.53E-3	-8.41E-5	5.40E-6	1.84E-6	4.97E-6	1.33E-5	-6.19E-4
CRU	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	[kg]	7.46E-1	0.00E+0	0.00E+0	0.00E+0	3.51E+0	3.51E+0	0.00E+0
MER	[kg]	7.46E-6	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EEE	[MJ]	1.55E-2	3.47E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EET	[MJ]	3.64E-2	6.23E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0

Caption	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

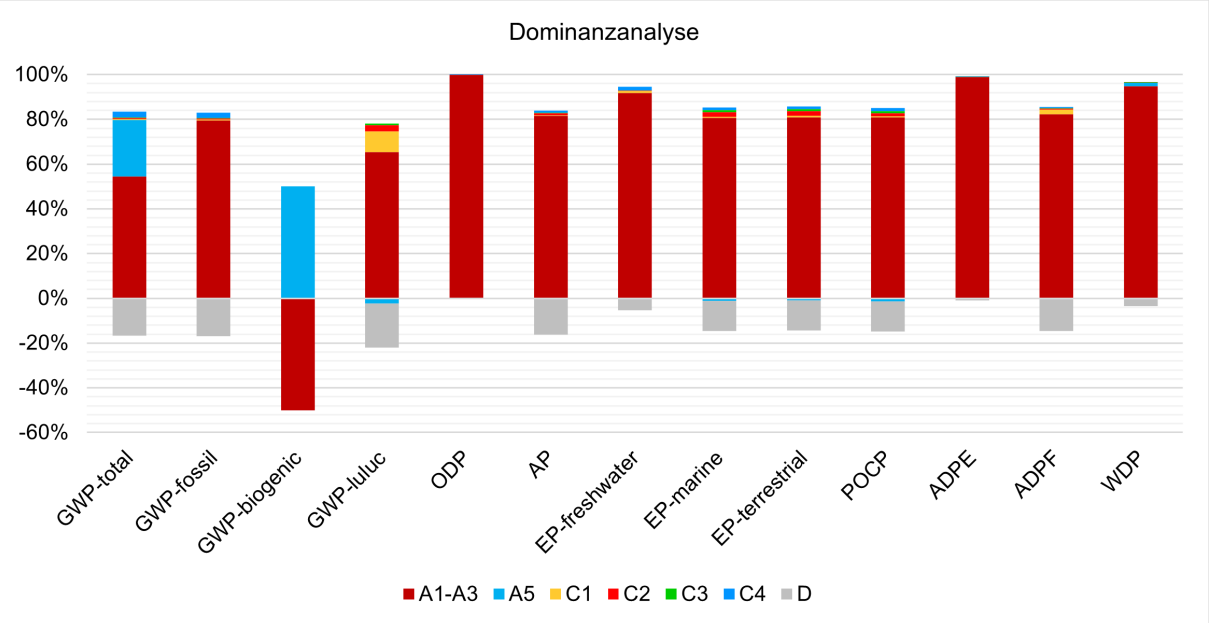
RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional:
1 m Schöck Isokorb® (X)T type Q

Indicator	Unit	A1-A3	A5	C1	C2	C3	C4	D
PM	[Disease Incidence]	9.53E-7	-1.45E-7	1.58E-9	1.69E-9	4.30E-9	5.27E-9	-1.65E-7
IRP	[kBq U235-Eq.]	8.74E+0	-1.46E-2	5.32E-4	2.69E-4	7.87E-4	1.30E-2	-5.87E-2
ETP-fw	[CTUe]	1.86E+2	-7.21E-1	3.56E+0	7.51E-1	2.66E-1	1.39E+0	-1.12E+1
HTP-c	[CTUh]	1.42E-8	-3.75E-11	7.14E-11	1.52E-11	5.71E-12	4.93E-11	-1.79E-8
HTP-nc	[CTUh]	1.23E-7	-9.52E-10	3.56E-9	8.43E-10	3.42E-10	6.14E-9	-1.70E-8
SQP	[-]	5.03E+2	-1.99E+2	1.38E+0	3.48E-1	8.58E-2	4.92E-2	-5.33E+0

Caption	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 The impact category Potential human exposure efficiency relative to U235 (IR) mainly addresses the possible impact of low-dose ionising radiation on human health in the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents and occupational exposure, nor does it consider effects due to the disposal of radioactive waste in underground facilities. Potential ionising radiation from soil, radon and some construction materials is also not measured by this indicator.
Disclaimer 2 for the indicators: abiotic depletion potential for non-fossil resources (ADPE), abiotic depletion potential for fossil resources (ADPF), water depletion potential (WDP), potential comparative toxic unit for ecosystems (ETP-fw), potential comparative toxic unit for humans (carcinogenic effect) (HTP-c), potential comparative toxic unit for humans (non-carcinogenic effect) (HTP-nc) and potential soil quality index (SQP): the results of this environmental impact indicator must be used with care as the uncertainties in these results are high or because experience with this indicator is limited. **Note** The impact assessment results are only relative statements that do not make any statements about endpoints of the impact categories, threshold or safety margin exceedances, or risks. *EC-JRC* characterisation factors were applied for all indicators mentioned.

6. LCA: Interpretation



In almost all impact categories, the production phase A1-A3 is critical. The stainless steel used has a relevant to significant influence. The ADP (Abiotic Depletion Potential) fossil category is determined by the stainless steel and the EPS used, as the latter is made from petroleum. EPS also contributes to the result in some other categories, although its percentage by mass is low (6 %). The fire safety board, which dominates with a percentage by mass of almost 32 %, only contributes to the LCA result in the categories GWP (Global Warming Potential) and ODP (Ozone Depletion Potential) in a relevant to significant amount. One component of the pressure bearing pad contributes significantly to EP-freshwater (Eutrophication Potential) and WDP (Water Depletion Potential). The secondary steel used plays a minor role, as does transport.
PENRT (Primary Energy Non-Renewable Total): The contributions to primary energy consumption are determined in the non-renewable sector by the energy required to produce all primary products and to a lesser extent in PENRM (Primary Energy Non-Renewable Materials) by the fossil fuels present as plastics.
PERT (Primary Energy Renewable Materials Total): In the renewable sector, the indicator is determined by the solar energy stored in the wooden pallets used as packaging materials (PERM).

7. Requisite evidence

When used as intended, no negative effects on the environment and health are to be expected.

The product is cast into concrete and has no contact with the indoor air or the building's outer shell. No evidence is required by law for the product.

8. References

Standards

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DIN 1045-1:2008-08, Concrete, reinforced and prestressed concrete structures - Part 1: Design and construction.

DIN 4102-2
DIN 4102-2:1977-09, Fire behaviour of building materials and building components; building components; definitions, requirements and tests.

EN 1992-1-1/NA
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EN 13163
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EN 13501-2
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EN 1365-2
DIN EN 1365-2:2012-12, Fire resistance tests for loadbearing elements - Part 2: Floors and roofs.

EN 15804
DIN EN 15804, Sustainability of construction works - Environmental product declarations -
Core rules for the product category of construction products (EN 15804:2012+A2:2019).

ISO 6946
DIN EN ISO 6946:2008-04, Building components and building elements - Thermal resistance and thermal transmittance - Calculation method (ISO 6946:2007).

ISO 9001
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ISO 10211
DIN EN ISO 10211:2008-04, Thermal bridges in building construction – Heat flows and surface temperatures – Detailed calculations (ISO 10211:2007).

ISO 14001
DIN EN ISO 14001:2009-11, Environmental management systems - Requirements with guidance for use (ISO 14001:2004 + Cor. 1:2009).

ISO 14025
DIN EN ISO 14025:2011-10, Environmental labels and declarations — Type III environmental declarations — Principles and procedures (ISO 14025:2011-10).

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European Technical Assessment, Deutsches Institut für Bautechnik, ETA-17/0261, 9 February 2021.

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European Technical Assessment, Deutsches Institut für Bautechnik, ETA-17/0262, 20 January 2021.

European Waste Catalogue
Regulation on the European Waste Catalogue (Abfallverzeichnis-Verordnung – AVV) of 10 December 2001.

GaBi database
GaBi 10.5 Data set documentation for the software system and databases, LBP, Universität Stuttgart und thinkstep AG, Leinfelden-Echterdingen, 2021. (http://documentation.gabi-software.com/).

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Software and Database for Life Cycle Engineering, LBP, Sphera, Leinfelden-Echterdingen, 2021.

IBU Programme Guide
General instructions for the EPD programme of the Institut Bauen und Umwelt e.V., Version 2.0, Institut

Bauen und Umwelt e.V. (Hrsg.), www.ibu-epd.com, 2021.

PCR Part A
Product Category Rules for Building-Related Products and Services – Part A: Calculation rules for the life cycle assessment and requirements on the project report according to EN 15804+A2, Version 1.1, Institut Bauen und Umwelt e.V. (Hrsg.), www.ibu-epd.com, 2019.

PCR: Load-bearing thermal insulation elements
Product Category Rules for Building-Related Products and Services – Part B:
Requirements relating to the EPD for LOAD-bearing thermal insulation elements, Version 1.2, Institut Bauen und Umwelt e.V. (Hrsg.), www.ibu-epd.com, 2017.

Thünen Institut
The carbon content in wood and paper products – derivation and conversion factors. Thünen Working Paper 38, 2014.

Regulation (EU) No. 305/2011
Regulation (EU) No. 305/2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC Text with EEA relevance, European Parliament and Council, 9 March 2011.

Z-15.7-240
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ANNEX 1

ANNEX 1: Self declaration from EPD owner
Specific Norwegian requirements

Applied electricity data set used in the manufacturing phase

The electricity mix for the electricity used in manufacturing (A3) is the electricity grid mix

<71,39 CO_2 eqv/MJ>

Content of dangerous substances

X The product contains no substances given by the REACH Candidate list or the Norwegian priority list.

The product contains substances that are less than 0.1% by weight given by the REACH Candidate or the Norwegian priority list.

The product contains dangerous substances more than 0.1% by weight given in the REACH candidate list or the Norwegian Priority List, concentrations is given in the EPD:

Dangerous substances from the REACH candidate list or the Norwegian Priority List	**CAS No.**	**Quantity (concentration, wt%/FU(DU)).**
Substance 1		
Substance n		

Transport from the place of manufacture to a central warehouse

Transport distance, and CO_2-eqv./DU from transport of the product from factory gate to central warehouse in Oslo shall be given. The following table shall be included in the EPD:

The calculations for the Kg CO2 eqv. were done with the transport calculator of lca.no, because we do not have the data of the shipping company. From the place of manufacture in Germany (Essen) to the central warehouse in Norway (Oslo) are 1190 km. On average, 160 km of the route is covered by ferry and the remaining 1030 km by Euro 5 truck 32t. The figures for the kg CO2 eqv. refer to 1 kg of product. If more is shipped, the kg CO2 eqv. must be multiplied by the mass of the transported quantity.

Type	Capacity utilisation (incl. return) %	Type of vehicle	Distance km	Fuel/Energy use	Unit	Value (l/t)	Kg CO2-eqv./DU
Boat		ferry	160				0,0898
Truck		Euro 5 truck 32t	1030	diesel			0,0036
Railway							
Rail							
Air							
Total							

Impact on the indoor environment

Indoor air emission testing has been performed; specify test method and reference; M1, _____

No test has being performed

X Not relevant; specify the element ist encased in concrete-> no impact on the indoor environment possible