

# Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

EKA2-EU



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**TROX<sup>®</sup> TECHNIK**  
The art of handling air

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The Norwegian EPD Foundation

**Owner of the declaration:**

TROX Group

**Product:**

EKA2-EU

**Declared unit:**

1 pcs

**This declaration is based on Product Category Rules:**

CEN Standard EN 15804:2012+A2:2019 serves as core PCR

NPCR 030:2021 Part B for ventilation components

**Program operator:**

The Norwegian EPD Foundation

**Declaration number:**

NEPD-8563-8221-EN

**Registration number:**

NEPD-8563-8221-EN

**Issue date:** 19.12.2024

**Valid to:** 19.12.2029

**EPD software:**

LCAno EPD generator ID: 720310

## General information

### Product

EKA2-EU

### Program operator:

The Norwegian EPD Foundation  
Post Box 5250 Majorstuen, 0303 Oslo, Norway  
Phone: +47 977 22 020  
web: [www.epd-norge.no](http://www.epd-norge.no)

### Declaration number:

NEPD-8563-8221-EN

### This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR  
NPCR 030:2021 Part B for ventilation components

### Statement of liability:

The owner of the declaration shall be liable for the underlying information and evidence. EPD Norway shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

### Declared unit:

1 pcs EKA2-EU

### Declared unit with option:

A1-A3,A4,C1,C2,C3,C4,D

### Functional unit:

EKA2-EU/200x200x500/B24

### General information on verification of EPD from EPD tools:

Independent verification of data, other environmental information and the declaration according to ISO 14025:2010, § 8.1.3 and § 8.1.4. Verification of each EPD is made according to EPD-Norway's guidelines for verification and approval requiring that tools are i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPD-Norway, and iii) the process is reviewed annually by an independent third party verifier. See Appendix G of EPD-Norway's General Programme Instructions for further information on EPD tools

### Verification of EPD tool:

Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPD-Norway's procedures and guidelines for verification and approval of EPD tools.

Third party verifier:

Alexander Borg, Asplan Viak AS

(no signature required)

### Owner of the declaration:

TROX Group  
Contact person: Alina Buchner  
Phone: +49 2845 2020  
e-mail: [productsustainability-de@troxgroup.com](mailto:productsustainability-de@troxgroup.com)

### Manufacturer:

TROX Group  
Heinrich-Trox-Platz 1  
47506 Neukirchen-Vluyn, Germany

### Place of production:

TROX GmbH - Werk Anholt  
Gendringer Str. 85  
46419 Isselburg, Germany

### Management system:

ISO 9001, ISO 14001:2015, ISO 50001:2018

### Organisation no:

DE 120250070

### Issue date:

19.12.2024

### Valid to:

19.12.2029

### Year of study:

2023

### Comparability:

EPD of construction products may not be comparable if they not comply with EN 15804 and seen in a building context.

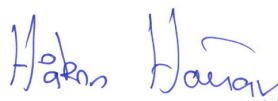
### Development and verification of EPD:

The declaration is created using EPD tool lca.tools ver EPD2022.03, developed by LCA.no. The EPD tool is integrated in the company's management system and has been approved by EPD Norway.

Developer of EPD: Doeres Heuven

Reviewer of company-specific input data and EPD: Michael Weise

### Approved:



Håkon Hauan  
Managing Director of EPD-Norway

## Product

### Product description:

For mechanical smoke extract systems and as an additional supply air inlet.

Rectangular smoke control dampers with air extract function, for smoke extract with mechanical smoke extract systems or as an additional supply air inlet.

For more information see: <https://www.troxuk.co.uk/smoke-control-dampers/eka2-eu-fb9b30fe69a51104>

### Product specification

Rectangular or square smoke control dampers in accordance with product standard DIN EN 12101-8, tested according to DIN EN 1366-10 and DIN EN 1366-2, for use in smoke extract systems. In addition to maintaining compartmentalisation and removing smoke, heat and combustion products from a fire compartment, smoke control dampers enable the controlled removal of released hazardous and toxic combustion and fire gases. The smoke control damper EKA2-EU can also be used in pressurised ventilation systems and venting systems for pressurised systems and as a pressure relief damper for gas extinguishing systems. Also for the extraction of smoke gases and for providing additional supply air for the mechanical smoke extraction of one or more fire compartments, and in all listed systems of the same type that must fulfil modulation applications. EKA2-EU can be used in combined smoke exhaust systems which have been approved for controlled ventilation. The fire-resistant smoke control damper for multiple compartments is suitable for installation in solid walls, lightweight partition walls and ceilings. The damper blade is moved via an OPEN/CLOSE actuator, optionally with a pre-assembled actuator bus control module.

This EPD includes the environmental data of the product series EKA2-EU. The following represents a representative dataset of the most sold variant in the declared sales year.

Materials	kg	%
Fire-, heat- and UV-stabilizers	0,07	0,87
Glass fibre reinforced plastic, polyamide	0,09	1,07
Metal - Galvanized Steel	6,01	70,32
Motor	1,20	14,04
Plastic	0,04	0,42
Plastic - Polyamide	0,00	0,02
Plastic - Polyethylene terephthalate (PET)	0,03	0,35
Plastic - Polypropylene (PP)	0,01	0,07
Rubber, natural (Latex)	0,00	0,01
Rubber, synthetic	0,02	0,18
Metal - Stainless steel	0,06	0,66
Metal - Steel	0,12	1,45
Chemical	0,90	10,53
Plastic - Polycarbonate (PC)	0,00	0,01
Total	8,55	100,00

Packaging	kg	%
Packaging - Pallet	7,00	99,83
Packaging - Plastic	0,01	0,17
Total incl. packaging	15,56	100,00

### Technical data:

Nominal sizes: 200 × 200 – 1500 × 800 (1000, if B ≤ 1250) mm.

Casing lengths: 305 and 500 mm.

Nominal sizes 200 × 200 – 1500 × 800 (1000, if B ≤ 1250) mm, for smoke gas.

flow rates up to 43,200 m<sup>3</sup>/h or 12,000 l/s at 10 m/s.

Differential pressure range: up to 1500 Pa.

Temperature range: -20 to 50 °C.

Upstream velocity: standard construction up to 15 m/s.

For more information see: <https://www.troxuk.co.uk/smoke-control-dampers/eka2-eu-fb9b30fe69a51104>

### Market:

Europe.

### Reference service life, product

20-25 years.

### Reference service life, building or construction works

60 years.

## LCA: Calculation rules

**Declared unit:**

1 pcs EKA2-EU

**Cut-off criteria:**

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not apply for hazardous materials and substances.

**Allocation:**

The allocation is made in accordance with the provisions of EN 15804. Energy, water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

**Data quality:**

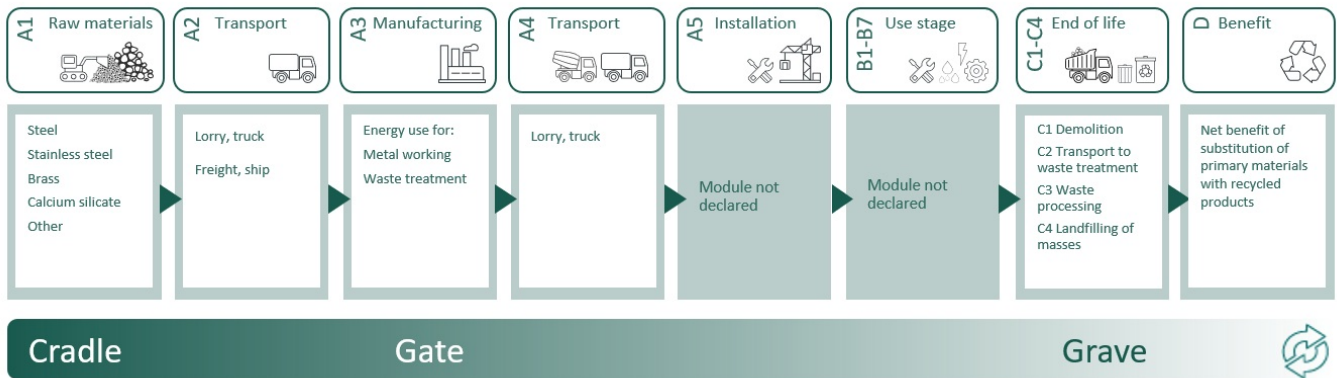
Specific data for the product composition are provided by the manufacturer. The data represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on EPDs according to EN 15804 and different LCA databases. The data quality of the raw materials in A1 is presented in the table below.

Materials	Source	Data quality	Year
Chemical	ecoinvent 3.6	Database	2019
Fire-, heat- and UV-stabilizers	ecoinvent 3.6	Database	2019
Glass fibre reinforced plastic, polyamide	Modified ecoinvent 3.6	Database	2019
Metal - Galvanized Steel	ecoinvent 3.6	Database	2020
Metal - Stainless steel	ecoinvent 3.6	Database	2019
Metal - Steel	ecoinvent 3.6	Database	2019
Motor	Modified ecoinvent 3.6	Database	2019
Packaging - Pallet	ecoinvent 3.6	Database	2019
Packaging - Plastic	ecoinvent 3.6	Database	2019
Plastic	ecoinvent 3.6	Database	2019
Plastic - Polyamide	ecoinvent 3.6	Database	2019
Plastic - Polycarbonate (PC)	ecoinvent 3.6	Database	2019
Plastic - Polyethylene terephthalate (PET)	ecoinvent 3.6	Database	2019
Plastic - Polypropylene (PP)	ecoinvent 3.6	Database	2019
Rubber, natural (Latex)	ecoinvent 3.6	Database	2019
Rubber, synthetic	ecoinvent 3.6	Database	2019

**System boundaries (X=included, MND=module not declared, MNR=module not relevant)**

Product stage			Construction installation stage	Use stage								End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	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	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X

**System boundary:**



**Additional technical information:**

- Complies with product standard DIN EN 12101-8 and is classified in accordance with DIN EN 13501-4.
- Classified EI 90/120 (view how it is) S 1500 Cmod AA multi.
- Pressure level 3 (-1500 Pa ..... 500 Pa).
- Can be used in smoke extract systems or in heating and ventilation systems or in a combination of these.
- For systems that require automatic activation (AA).
- Wide range of application options for fire compartment separation.
- Single-blade room partitioning with mechanical resistance.
- Sheet steel construction in lightweight design.
- Silicone free.
- No stop bars, therefore large free area.
- Leakage tightness class at least 3C for casing and damper tightness, in accordance with DIN EN 1751.
- Thermal insulation with insulating wool (optionally, as it depends on the airflow direction).
- Connection to air ducts in accordance with DIN EN 1366-1 and DIN EN 1366-8 (self-contained duct system or thermally insulated) or tested in accordance with DIN EN 1366-9.
- For smoke extract ducts made of sheet steel, or self-contained duct system with a wall thickness of 35 mm or more.
- Integration into the management and control equipment with TROXNETCOM or with various control bus systems possible.











## LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

Transport from production place to user (A4)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, 16-32 tonnes, EURO 6 (km)	36,7 %	800	0,043	l/tkm	34,40
De-construction demolition (C1)					
	Unit	Value			
Demolition of building per kg of ventilation product (kg)	kg/DU	8,51			
Transport to waste processing (C2)					
Transport to waste processing (C2)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, 16-32 tonnes, EURO 6 (km)	36,7 %	50	0,043	l/tkm	2,15
Waste processing (C3)					
	Unit	Value			
Materials to recycling (kg)	kg	6,65			
Waste treatment per kg Rubber, municipal incineration with fly ash extraction (kg)	kg	0,01			
Waste treatment per kg Plastics, incineration (kg)	kg	0,07			
Waste treatment per kg Hazardous waste, incineration (kg)	kg	0,04			
Waste treatment per kg Polyethylene terephthalate (PET), incineration with fly ash extraction (kg)	kg	0,02			
Waste treatment per kg Polypropylene (PP), incineration (kg)	kg	0,00			
Waste treatment per kg Bulk iron waste, excluding reinforcement, sorting plant (kg)	kg	1,20			
Disposal (C4)					
	Unit	Value			
Waste, scrap steel, to landfill (kg)	kg	0,71			
Landfilling of ashes from incineration of Rubber, municipal incineration with fly ash extraction (kg)	kg	0,00			
Landfilling of ashes from incineration of Plastics, process per kg ashes and residues (kg)	kg	0,00			
Waste, plastic, mixture, to landfill (kg)	kg	0,09			
Waste, hazardous waste, to landfill (kg)	kg	0,90			
Landfilling of ashes from incineration per kg Hazardous waste, from incineration (kg)	kg	0,01			
Waste, hazardous waste, to average treatment - A3, inkl. transp. (kg)	kg	0,04			
Landfilling of ashes from incineration of Polyethylene terephthalate (PET), process per kg ashes and residues (kg)	kg	0,00			
Landfilling of ashes from incineration of Polypropylene (PP), process per kg ashes and residues (kg)	kg	0,00			
Waste treatment per kg Copper slag, to landfill, residual material landfill (kg)	kg	0,02			
Waste, aluminium, to landfill (kg)	kg	0,01			
Benefits and loads beyond the system boundaries (D)					
	Unit	Value			
Substitution of primary steel with net scrap (kg)	kg	1,95			
Substitution of thermal energy, district heating (MJ)	MJ	0,48			
Substitution of electricity (MJ)	MJ	0,03			
Substitution of primary copper with net scrap (kg)	kg	0,07			
Substitution of primary aluminium with net scrap (kg)	kg	0,10			

## LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

Environmental impact									
Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D	
 GWP-total	kg CO <sub>2</sub> -eq	3,82E+01	2,03E+00	1,12E-02	1,27E-01	3,00E-01	2,35E-01	-3,22E+00	
 GWP-fossil	kg CO <sub>2</sub> -eq	3,76E+01	2,03E+00	1,12E-02	1,27E-01	2,99E-01	2,33E-01	-3,20E+00	
 GWP-biogenic	kg CO <sub>2</sub> -eq	5,62E-01	8,41E-04	2,10E-06	5,26E-05	2,17E-04	2,27E-04	-5,99E-03	
 GWP-luluc	kg CO <sub>2</sub> -eq	4,82E-02	7,24E-04	8,84E-07	4,52E-05	2,41E-05	1,74E-03	-1,77E-02	
 ODP	kg CFC11 -eq	3,21E-06	4,61E-07	2,43E-09	2,88E-08	1,06E-08	1,43E-08	-2,04E-04	
 AP	mol H+ -eq	3,87E-01	5,84E-03	1,17E-04	3,65E-04	1,56E-04	9,95E-04	-4,60E-02	
 EP-FreshWater	kg P -eq	2,59E-03	1,62E-05	4,09E-08	1,02E-06	2,11E-06	9,30E-06	-3,65E-04	
 EP-Marine	kg N -eq	4,54E-02	1,16E-03	5,18E-05	7,23E-05	3,86E-05	2,19E-04	-4,17E-03	
 EP-Terrestrial	mol N -eq	1,06E+00	1,29E-02	5,69E-04	8,08E-04	4,20E-04	2,24E-03	-4,96E-02	
 POCP	kg NMVOC -eq	1,63E-01	4,95E-03	1,56E-04	3,10E-04	1,13E-04	1,05E-03	-1,86E-02	
 ADP-minerals&metals <sup>1</sup>	kg Sb-eq	2,29E-02	5,62E-05	1,72E-08	3,51E-06	3,37E-07	1,26E-06	-2,01E-04	
 ADP-fossil <sup>1</sup>	MJ	5,01E+02	3,07E+01	1,54E-01	1,92E+00	3,90E-01	2,39E+00	-3,07E+01	
 WDP <sup>1</sup>	m <sup>3</sup>	2,56E+03	2,97E+01	3,28E-02	1,86E+00	3,14E+00	2,77E+00	-3,76E+02	

GWP-total = Global Warming Potential total; 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







"Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed

1. 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

## Remarks to environmental impacts

### Additional environmental impact indicators

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
 PM	Disease incidence	3,61E-06	1,24E-07	3,11E-09	7,78E-09	2,06E-09	1,81E-08	-2,99E-07
 IRP <sup>2</sup>	kgBq U235 -eq	2,04E+00	1,34E-01	6,62E-04	8,40E-03	1,94E-03	4,24E-03	-4,25E-02
 ETP-fw <sup>1</sup>	CTUe	1,77E+03	2,28E+01	8,44E-02	1,42E+00	2,13E+00	1,09E+01	-4,04E+02
 HTP-c <sup>1</sup>	CTUh	1,86E-07	0,00E+00	0,00E+00	0,00E+00	9,20E-11	1,35E-09	-1,64E-08
 HTP-nc <sup>1</sup>	CTUh	2,83E-06	2,49E-08	7,70E-11	1,56E-09	8,24E-10	3,70E-08	-1,29E-07
 SQP <sup>1</sup>	dimensionless	1,30E+03	2,15E+01	1,96E-02	1,34E+00	1,55E-01	6,03E+00	-5,15E+00










PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Potential Soil Quality Index (dimensionless)

"Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed

1. 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
2. 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									
Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D	
 PERE	MJ	1,18E+02	4,40E-01	8,35E-04	2,75E-02	7,30E-02	7,79E-01	-6,34E+00	
 PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
 PERT	MJ	2,15E+02	4,40E-01	8,35E-04	2,75E-02	7,30E-02	7,79E-01	-6,34E+00	
 PENRE	MJ	4,97E+02	3,07E+01	1,54E-01	1,92E+00	3,91E-01	2,39E+00	-3,07E+01	
 PENRM	MJ	5,72E+00	0,00E+00	0,00E+00	0,00E+00	-6,84E-01	0,00E+00	0,00E+00	
 PENRT	MJ	5,02E+02	3,07E+01	1,54E-01	1,92E+00	-2,94E-01	2,39E+00	-3,07E+01	
 SM	kg	5,19E+00	0,00E+00	7,58E-05	0,00E+00	1,32E-05	1,94E-02	5,13E-02	
 RSF	MJ	2,36E+00	1,57E-02	2,06E-05	9,84E-04	1,61E-03	2,03E-03	8,09E-02	
 NRSF	MJ	1,14E+01	5,63E-02	3,02E-04	3,52E-03	1,41E-05	1,73E-01	2,26E+00	
 FW	m <sup>3</sup>	4,29E-01	3,29E-03	7,95E-06	2,05E-04	4,24E-04	1,41E-03	-3,09E-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 materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

\*Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed

### End of life - Waste






Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
 HWD	kg	3,86E-01	1,59E-03	4,55E-06	9,91E-05	1,53E-06	9,21E-01	-9,51E-03
 NHWD	kg	1,23E+01	1,49E+00	1,83E-04	9,34E-02	3,70E-02	8,39E-01	-1,22E+00
 RWD	kg	1,87E-03	2,09E-04	1,07E-06	1,31E-05	1,55E-07	7,91E-07	-4,11E-05

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

\*Reading example: 9,0 E-03 =  $9,0 \cdot 10^{-3} = 0,009$

\*INA Indicator Not Assessed

### End of life - Output flow

Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
 CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
 MFR	kg	7,52E-01	0,00E+00	7,45E-05	0,00E+00	6,65E+00	8,07E-03	-2,01E-03
 MER	kg	2,44E-01	0,00E+00	2,31E-07	0,00E+00	6,32E-02	3,68E-06	-2,64E-04
 EEE	MJ	1,44E-01	0,00E+00	7,92E-07	0,00E+00	3,19E-02	2,69E-05	-6,48E-04
 EET	MJ	2,18E+00	0,00E+00	1,20E-05	0,00E+00	4,83E-01	4,06E-04	-9,80E-03

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy electrical; EET = Exported energy thermal

\*Reading example: 9,0 E-03 =  $9,0 \cdot 10^{-3} = 0,009$

\*INA Indicator Not Assessed

### Biogenic Carbon Content

Indicator	Unit	At the factory gate
Biogenic carbon content in product	kg C	0,00E+00
Biogenic carbon content in accompanying packaging	kg C	0,00E+00

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>

## Additional requirements

### Greenhouse gas emissions from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

Electricity mix	Source	Amount	Unit
Electricity, market mix (kWh) - Germany	ecoinvent 3.6	585,93	g CO <sub>2</sub> -eq/kWh

### Dangerous substances

The product contains dangerous substances, more than 0,1% by weight, given by the REACH Candidate List, see table:

Name	CASNo	Amount
Lead	7439-92-1	> 0.1% w/w
Lead monoxide (lead oxide)	1317-36-8	> 0.1% w/w
2-methylimidazole	693-98-1	> 0.1% w/w
Diboron trioxide	1303-86-2	> 0.1% w/w

### Indoor environment

## Additional Environmental Information

Additional environmental impact indicators required in NPCR Part A for construction products								
Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWPIOBC	kg CO <sub>2</sub> -eq	3,82E+01	2,03E+00	1,12E-02	1,27E-01	3,00E-01	3,21E-02	-4,15E+00

GWPIOBC: Global warming potential calculated according to the principle of instantaneous oxidation. In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.

## Bibliography

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 Global program operator	<b>Program operator and publisher</b> The Norwegian EPD Foundation Post Box 5250 Majorstuen, 0303 Oslo, Norway	Phone: +47 977 22 020 e-mail: <a href="mailto:post@epd-norge.no">post@epd-norge.no</a> web: <a href="http://www.epd-norge.no">www.epd-norge.no</a>
 The art of handling air	<b>Owner of the declaration:</b> TROX Group Heinrich-Trox-Platz 1, 47506 Neukirchen-Vluyn, Germany	Phone: +49 2845 2020 e-mail: <a href="mailto:productsustainability-de@troxgroup.com">productsustainability-de@troxgroup.com</a> web: <a href="https://www.trox.de/en">https://www.trox.de/en</a>
	<b>Author of the Life Cycle Assessment</b> LCA.no AS Dokka 6A, 1671 Kråkerøy, Norway	Phone: +47 916 50 916 e-mail: <a href="mailto:post@lca.no">post@lca.no</a> web: <a href="http://www.lca.no">www.lca.no</a>
	<b>Developer of EPD generator</b> LCA.no AS Dokka 6A, 1671 Kråkerøy, Norway	Phone: +47 916 50 916 e-mail: <a href="mailto:post@lca.no">post@lca.no</a> web: <a href="http://www.lca.no">www.lca.no</a>
	ECO Platform ECO Portal	web: <a href="http://www.eco-platform.org">www.eco-platform.org</a> web: ECO Portal