epd-norge
Global program operatør

# Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

## KVS-Station


TROX TECHNIK
The art of handling air

The Norwegian EPD Foundation

**Owner of the declaration:**
TROX Group

**Product:**
KVS-Station

**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-8458-8124-EN

**Registration number:**

NEPD-8458-8124-EN

**Issue date:** 12.12.2024

**Valid to:** 12.12.2029

**EPD software:**
LCAno EPD generator ID: 548367

## General information

**Product**

KVS-Station

**Owner of the declaration:**

TROX Group
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**Program operator:**

The Norwegian EPD Foundation
Post Box 5250 Majorstuen, 0303 Oslo, Norway
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**Manufacturer:**

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

**Declaration number:**

NEPD-8458-8124-EN

**Place of production:**

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

**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

**Management system:**

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

**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.

**Organisation no:**

DE 120250070

**Declared unit:**

1 pcs KVS-Station

**Issue date:**

12.12.2024

**Declared unit with option:**

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

**Valid to:**

12.12.2029

**Year of study:**

2023

**Functional unit:**

**Comparability:**

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

**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

**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: Janik Horst

Reviewer of company-specific input data and EPD: Alina Buchner

**Verification of EPD tool:**

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

Third party verifier:

Alexander Borg, Asplan Viak AS

(no signature required)

**Approved:**

Håkon Hauan
Managing Director of EPD-Norway

## Product

### Product description:

Circulation systems (KVS) are regenerative heat recovery systems in which the air flows are completely separated from each other. They are therefore suitable for applications in which where, for hygienic reasons, no leakages between supply between the supply and extract air are desired or permitted for example in hospitals and in the food and pharmaceutical food and pharmaceutical industries.They are also used when supply and exhaust air units are installed separately due to the spatial situation. A recirculation system consists of at least one heat exchanger in the supply air and extract air flow, which are connected by a hydraulic circuit. The heat transfer medium glycol-water mixture is used as the heat transfer medium in most cases.

### Product specification

The hydraulic station for the X-CUBE air handling unit impresses with its performance in heat recovery, heat supply and cooling supply.
The easy integration into the building management system and the minimal wiring effort wiring ensure the simplest installation and commissioning, while the intelligent control functions for maximum energy efficiency.

| Materials | kg | % |
|---|---|---|
| Electronic - Cable | 0,88 | 0,33 |
| Electronic - Unspecified | 32,42 | 12,02 |
| Insulation | 1,13 | 0,42 |
| Metal - Cast iron | 1,70 | 0,63 |
| Metal - Galvanized Steel | 123,88 | 45,94 |
| Motor | 50,20 | 18,62 |
| Plastic - Nylon (PA) | 1,73 | 0,64 |
| Plastic - Polyamide | 0,26 | 0,10 |
| Rubber, synthetic | 8,92 | 3,31 |
| Metal - Aluminium | 2,40 | 0,89 |
| Metal - Brass | 19,75 | 7,32 |
| Metal - Stainless steel | 26,38 | 9,78 |
| Total | 269,66 | 100,00 |

| Packaging | kg | % |
|---|---|---|
| Packaging - Pallet | 20,00 | 96,01 |
| Packaging - Plastic | 0,11 | 0,51 |
| Packaging - Polystyrene | 0,20 | 0,94 |
| Packaging - Recycled cardboard | 0,53 | 2,54 |
| Total incl. packaging | 290,49 | 100,00 |

### Technical data:

- High-pressure centrifugal pumps with IE4 motors
- High-quality stainless steel press-fit system up to DN 65
- From DN 65 with coupling system with detachable connection connection
- Optional thermal insulation of the pipework

Pressure switch with two switching points, a diaphragm expansion vessel and an 8 bar safety valve ensure high operational safety in the TROX hydraulic station for high operational reliability.

### Market:

Europe.

### Reference service life, product

20 years.

### Reference service life, building or construction works

60 years.

## LCA: Calculation rules

### Declared unit:

1 pcs KVS-Station

### 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:**

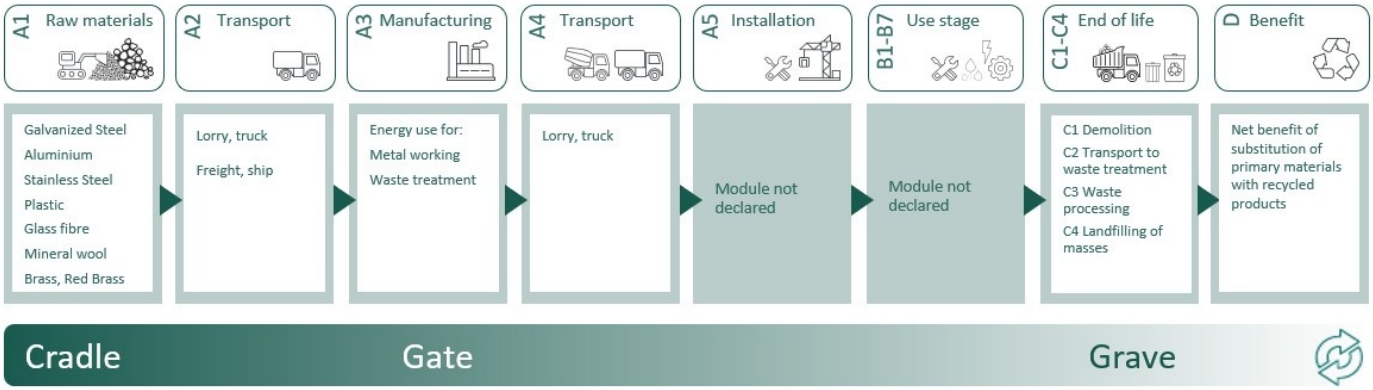
Specific data for the product composition are provided by the manufacturer. The data represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on EPDs according to EN 15804 and different LCA databases. The data quality of the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

| Materials | Source | Data quality | Year |
|---|---|---|---|
| Electronic - Cable | ecoinvent 3.6 | Database | 2019 |
| Electronic - Unspecified | ecoinvent 3.6 | Database | 2019 |
| Insulation | EPD-ARM-20200219-IBB1-DE | EPD | 2020 |
| Metal - Aluminium | ecoinvent 3.6 | Database | 2019 |
| Metal - Brass | ecoinvent 3.6 | Database | 2019 |
| Metal - Brass | Ökobaudat generic dataset, 2026 | Database | 2023 |
| Metal - Cast iron | modified ecoinvent 3.6 | Database | 2019 |
| Metal - Galvanized Steel | ecoinvent 3.6 | Database | 2020 |
| Metal - Stainless steel | ecoinvent 3.6 | Database | 2019 |
| Metal - Stainless steel | EPD-AWU-20230569-CBA1-EN | EPD | 2023 |
| Motor | Modified ecoinvent 3.6 | Database | 2019 |
| Packaging - Pallet | ecoinvent 3.6 | Database | 2019 |
| Packaging - Plastic | ecoinvent 3.6 | Database | 2019 |
| Packaging - Polystyrene | ecoinvent 3.6 | Database | 2019 |
| Packaging - Recycled cardboard | Modified ecoinvent 3.6 | Database | 2019 |
| Plastic - Nylon (PA) | ecoinvent 3.6 | Database | 2019 |
| Plastic - Polyamide | 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:

If necessary, the KVS station can take over the entire temperature control in the AHU. Corresponding sensors are installed in the AHU for this purpose.

Indirect adiabatic cooling
To save mechanical cooling capacity in summer, an adiabatic humidifier can be installed in the exhaust air installed in the extract air flow. It cools the extract air through adiabatic humidification. Humidification takes place until the air is almost saturated. The cooled air absorbs the heat of the glycol mixture in the KVS and cools it down in the process. The cooled medium in turn is then used to pre-cool the warm outside air.

The TROX hydraulic station is available in three housing variants:
- Open frame construction
- Closed housing
- Weatherproof design

## 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 | 269,66 | | | |

| 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 | 202,53 | | | |
| Waste treatment per kg Rubber, municipal incineration with fly ash extraction (kg) | kg | 8,47 | | | |
| Waste treatment per kg of waste cable, manual treatment (kg) | kg | 0,88 | | | |
| Waste treatment per kg Polyethylene terephthalate (PET), incineration with fly ash extraction (kg) | kg | 0,15 | | | |
| Waste treatment per kg Polyethylene (PE), incineration (kg) | kg | 0,23 | | | |
| Waste treatment per kg Plastics, incineration (kg) | kg | 1,56 | | | |
| Waste treatment per kg Bulk iron waste, excluding reinforcement, sorting plant (kg) | kg | 50,20 | | | |
| Waste treatment per kg Electronic scrap, incineration (kg) | kg | 32,42 | | | |

| Disposal (C4) | Unit | Value | | | |
|---|---|---|---|---|---|
| Waste, scrap steel, to landfill (kg) | kg | 18,79 | | | |
| Waste treatment per kg Brass slag, to landfill, residual material landfill (kg) | kg | 1,98 | | | |
| Landfilling of ashes from incineration of Rubber, municipal incineration with fly ash extraction (kg) | kg | 0,44 | | | |
| Landfilling of ashes from incineration of Polyethylene terephthalate (PET), process per kg ashes and residues (kg) | kg | 0,00 | | | |
| Waste treatment per kg Copper slag, to landfill, residual material landfill (kg) | kg | 0,85 | | | |
| Landfilling of ashes from incineration of Polyethylene (PE), process per kg ashes and residues (kg) | kg | 0,01 | | | |
| Landfilling of ashes from incineration of Plastics, process per kg ashes and residues (kg) | kg | 0,30 | | | |
| Waste, plastic, mixture, to landfill (kg) | kg | 2,02 | | | |
| Waste, aluminium, to landfill (kg) | kg | 0,65 | | | |
| Landfilling of ashes from incineration of Electronic scrap, process of ashes and residues (kg) | kg | 22,75 | | | |

| Benefits and loads beyond the system boundaries (D) | Unit | Value | | | |
|---|---|---|---|---|---|
| Substitution of primary steel with net scrap (kg) | kg | 71,72 | | | |
| Substitution of primary Brass with net scrap (kg) | kg | 4,72 | | | |
| Substitution of thermal energy, district heating (MJ) | MJ | 184,50 | | | |
| Substitution of electricity (MJ) | MJ | 12,20 | | | |
| Substitution of primary copper with net scrap (kg) | kg | 3,07 | | | |
| Substitution of primary aluminium with net scrap (kg) | kg | 6,26 | | | |

## 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 $CO_2$ -eq | 2,30E+03 | 3,80E+01 | 3,56E-01 | 2,37E+00 | 6,56E+01 | 3,10E+00 | -1,65E+02 |
| | GWP-fossil | kg $CO_2$ -eq | 2,28E+03 | 3,80E+01 | 3,56E-01 | 2,37E+00 | 6,56E+01 | 3,09E+00 | -1,63E+02 |
| | GWP-biogenic | kg $CO_2$ -eq | 1,94E+01 | 1,57E-02 | 6,67E-05 | 9,82E-04 | 6,02E-03 | 4,31E-03 | -4,49E-01 |
| | GWP-luluc | kg $CO_2$ -eq | 3,76E+00 | 1,35E-02 | 2,80E-05 | 8,44E-04 | 1,51E-03 | 1,08E-03 | -1,17E+00 |
| | ODP | kg CFC11 -eq | 1,84E-04 | 8,60E-06 | 7,69E-08 | 5,37E-07 | 2,47E-07 | 1,82E-07 | -7,79E-02 |
| | AP | mol H+ -eq | 2,61E+01 | 1,09E-01 | 3,72E-03 | 6,82E-03 | 1,76E-02 | 6,37E-03 | -3,90E+00 |
| | EP-FreshWater | kg P -eq | 3,50E-01 | 3,03E-04 | 1,29E-06 | 1,90E-05 | 5,36E-05 | 3,52E-05 | -3,06E-02 |
| | EP-Marine | kg N -eq | 3,04E+00 | 2,16E-02 | 1,64E-03 | 1,35E-03 | 7,08E-03 | 1,96E-03 | -2,77E-01 |
| | EP-Terrestial | mol N -eq | 4,68E+01 | 2,41E-01 | 1,80E-02 | 1,51E-02 | 7,35E-02 | 1,92E-02 | -3,57E+00 |
| | POCP | kg NMVOC -eq | 1,05E+01 | 9,25E-02 | 4,95E-03 | 5,78E-03 | 1,81E-02 | 5,39E-03 | -1,16E+00 |
| | ADP-minerals&metals[1] | kg Sb-eq | 9,65E+01 | 1,05E-03 | 5,46E-07 | 6,55E-05 | 1,83E-05 | 1,35E-05 | -1,30E-01 |
| | ADP-fossil[1] | MJ | 2,95E+04 | 5,74E+02 | 4,89E+00 | 3,59E+01 | 2,12E+01 | 1,66E+01 | -1,69E+03 |
| | WDP[1] | $m^3$ | 1,12E+05 | 5,55E+02 | 1,04E+00 | 3,47E+01 | 1,47E+02 | 5,56E+01 | -2,77E+04 |

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*10-3 = 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 | 1,70E-04 | 2,32E-06 | 9,84E-08 | 1,45E-07 | 1,02E-07 | 7,68E-08 | -1,76E-05 |
| | IRP[2] | kgBq U235 -eq | 1,13E+02 | 2,51E+00 | 2,10E-02 | 1,57E-01 | 8,58E-02 | 7,25E-02 | -3,95E+00 |
| | ETP-fw[1] | CTUe | 2,26E+05 | 4,25E+02 | 2,67E+00 | 2,66E+01 | 1,59E+02 | 5,10E+02 | -3,49E+04 |
| | HTP-c[1] | CTUh | 9,15E-06 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 3,49E-09 | 6,63E-08 | -9,58E-07 |
| | HTP-nc[1] | CTUh | 2,14E-04 | 4,65E-07 | 2,43E-09 | 2,90E-08 | 3,07E-07 | 4,53E-06 | -2,92E-05 |
| | SQP[1] | dimensionless | 1,50E+04 | 4,01E+02 | 6,21E-01 | 2,51E+01 | 7,35E+00 | 2,15E+01 | -5,23E+02 |

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*10-3 = 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 | 3,92E+03 | 8,22E+00 | 2,65E-02 | 5,14E-01 | 1,78E+00 | 1,06E+00 | -4,91E+02 |
| | PERM | MJ | 2,33E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | -8,64E-02 | 0,00E+00 | 0,00E+00 |
| | PERT | MJ | 3,92E+03 | 8,22E+00 | 2,65E-02 | 5,14E-01 | 1,70E+00 | 1,06E+00 | -4,91E+02 |
| | PENRE | MJ | 2,93E+04 | 5,74E+02 | 4,89E+00 | 3,59E+01 | 2,12E+01 | 1,66E+01 | -1,69E+03 |
| | PENRM | MJ | 3,27E+02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | -3,11E+02 | 0,00E+00 | 0,00E+00 |
| | PENRT | MJ | 2,96E+04 | 5,74E+02 | 4,89E+00 | 3,59E+01 | -2,90E+02 | 1,66E+01 | -1,69E+03 |
| | SM | kg | 1,49E+02 | 0,00E+00 | 2,40E-03 | 0,00E+00 | 5,53E-04 | 1,75E-04 | 6,14E-01 |
| | RSF | MJ | 7,56E+01 | 2,94E-01 | 6,51E-04 | 1,84E-02 | 4,25E-02 | 2,54E-02 | 2,48E+00 |
| | NRSF | MJ | 2,47E+02 | 1,05E+00 | 9,58E-03 | 6,57E-02 | -1,97E-02 | 3,63E-02 | 7,80E+01 |
| | FW | $m^3$ | 2,47E+01 | 6,14E-02 | 2,52E-04 | 3,84E-03 | 1,05E-01 | 6,39E-02 | -2,33E+00 |

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*10-3 = 0,009"
*INA Indicator Not Assessed

## End of life - Waste

| Indicator | | Unit | A1-A3 | A4 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| | HWD | kg | 1,66E+01 | 2,96E-02 | 1,44E-04 | 1,85E-03 | 1,08E-01 | 1,01E+00 | -4,60E-01 |
| | NHWD | kg | 6,18E+02 | 2,79E+01 | 5,79E-03 | 1,74E+00 | 1,53E+01 | 4,04E+01 | -5,93E+01 |
| | RWD | kg | 1,00E-01 | 3,91E-03 | 3,40E-05 | 2,44E-04 | 6,82E-05 | 6,55E-05 | -3,63E-03 |

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

"Reading example: 9,0 E-03 = 9,0*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 | 2,36E-03 | 0,00E+00 | 2,03E+02 | 3,37E-04 | -2,90E-01 |
| | MER | kg | 2,44E-01 | 0,00E+00 | 7,32E-06 | 0,00E+00 | 8,85E+00 | 9,24E-06 | -3,60E-02 |
| | EEE | MJ | 1,44E-01 | 0,00E+00 | 2,51E-05 | 0,00E+00 | 3,04E+01 | 3,02E-04 | -1,84E-01 |
| | EET | MJ | 2,17E+00 | 0,00E+00 | 3,80E-04 | 0,00E+00 | 4,61E+02 | 4,57E-03 | -2,78E+00 |

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*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 CO2

## 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 CO2-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 |

### 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 $CO_2$ -eq | 2,30E+03 | 3,80E+01 | 3,56E-01 | 2,37E+00 | 6,56E+01 | 3,14E+00 | -1,98E+02 |

GWP-IOBC: 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

ISO 14025:2010 Environmental labels and declarations - Type III environmental declarations - Principles and procedures.
ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines.
EN 15804:2012+A2:2019 Environmental product declaration - Core rules for the product category of construction products.
ISO 21930:2017 Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products.
ecoinvent v3, Allocation, cut-off by classification, Swiss Centre of Life Cycle Inventories.
Iversen et al., (2021) eEPD v2021.09 Background information for EPD generator tool system verification, LCA.no Report number: 07.21
Graafland and Iversen (2022) EPD generator for NPCR 030 Ventilation components, Background information for EPD generator application and LCA data, LCA.no report number: 12.22
NPCR Part A: Construction products and services. Ver. 2.0. April 2021, EPD-Norge.
NPCR 030 Part B for Ventilation components, Ver. 1.0, 18.05.2021, EPD Norway.

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|---|---|---|---|
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