

# Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

EK2-EU



---

**TROX®** TECHNIK  
The art of handling air

**Owner of the declaration:**

TROX Group

**Product:**

EK2-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:**

**Registration number:**

**Issue date:**

**Valid to:**

**EPD Software:**

LCA.no EPD generator ID: 140216

---

The Norwegian EPD Foundation

## General information

### Product

EK2-EU

### Program operator:

Post Box 5250 Majorstuen, 0303 Oslo, Norway  
The Norwegian EPD Foundation  
Phone: +47 23 08 80 00  
web: [post@epd-norge.no](mailto:post@epd-norge.no)

### Declaration number:

### 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 EK2-EU

### Declared unit with option:

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

### Functional unit:

### 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 EPDNorway'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: Dirk Scherder  
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:

### Valid to:

### Year of study:

2022

### 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 Heuvers

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

### Approved:

## Product

### Product description:

Rectangular smoke control dampers with ventilation function for heat and smoke exhaust with mechanical smoke extract systems, for the provision of additional supply air and for use in pressure differential systems.

For more information see: <https://www.troxuk.co.uk/smoke-control-dampers/ek2-eu-0dd66d9a7f9a4e6c>.

### Product specification

Rectangular or square smoke control dampers to product standard EN 12101-8, tested to EN 1366-10 and EN 1366-2, for use in smoke extract systems. Smoke control dampers not only prevent the spreading of smoke and combustion products between fire compartments, they also prevent the leakage of emitted, dangerous and poisonous fire suppression gases from the affected area, and they maintain positive pressure in pressure differential systems. The EK2-EU is suitable as a pressure relief damper for gas fire extinguishing systems. For extracting smoke gases and for providing additional supply air to one or more fire compartments. The EK2-EU can be used in smoke extract systems which have been approved for ventilation. The fire-resistant smoke control damper for multiple compartments is suitable for installation in solid walls and shafts, lightweight partition walls and ceiling slabs, as well as in and on fire-resistant smoke extract ducts. Open/Close actuator, with fully wired and ready-to-operate control module in a temperature resistant encasing as an option.

| Materials                                 | kg    | %     |
|-------------------------------------------|-------|-------|
| Chemical                                  | 24,24 | 93,22 |
| Filter, mineral based                     | 0,00  | 0,02  |
| Fire-, heat- and UV-stabilizers           | 0,00  | 0,01  |
| Glass fibre reinforced plastic, polyamide | 0,04  | 0,17  |
| Metal - Aluminium                         | 0,02  | 0,09  |
| Metal - Brass                             | 0,08  | 0,31  |
| Metal - Galvanized Steel                  | 0,10  | 0,37  |
| Metal - Stainless steel                   | 0,59  | 2,29  |
| Mineral                                   | 0,01  | 0,05  |
| Motor                                     | 0,86  | 3,31  |
| Wood - Medium Density Fibreboard (MDF)    | 0,04  | 0,17  |
| Total                                     | 26,01 |       |

| Packaging             | kg    | %     |
|-----------------------|-------|-------|
| Packaging - Pallet    | 3,30  | 66,04 |
| Packaging - Paper     | 1,50  | 29,95 |
| Packaging - Plastic   | 0,20  | 4,00  |
| Total incl. packaging | 31,00 |       |

### Technical data:

Nominal sizes B × H: 200 × 200 mm – 1500 × 800 mm.

Volume flow rate range: Up to 12000 l/s or 43200 m³/h.

Differential pressure range: Pressure level 3: -1500 – 500 Pa.

Operating temperature: -30 – 50 °C without temperatures below the dew point.

Upstream velocity\*: = 10 m/s with the maximum dimensions > 10 – 15 m/s with smaller dimensions, up to 43200 m³/h.

Closed damper blade air leakage: EN 1751, at least Class 3.

Casing leakage: EN 1751, Class C.

EC conformity:

EU Construction Products Regulation no. 305/2011.

EN 12101-8 Smoke and heat control systems – Smoke control dampers.

EN 1366-10 Fire resistance tests for service installations – Smoke control dampers.

EN 1366-2 Fire resistance tests for service installations – Fire dampers.

EN 13501-4 Fire classification of construction products and building elements using data from fire resistance tests.

EN 1751 Ventilation for buildings – Air terminal devices.

Declaration of performance: DoP/EK2-EU/001.

\*If actuation (change of damper blade position, moving away from the end position) is safely prevented even with an upstream velocity of more than 10 m/s, all sizes up to the maximum size can be used with an upstream velocity of 15 m/s.

For more technical data see: <https://www.troxuk.co.uk/smoke-control-dampers/ek2-eu-0dd66d9a7f9a4e6c>.

### 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 EK2-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:

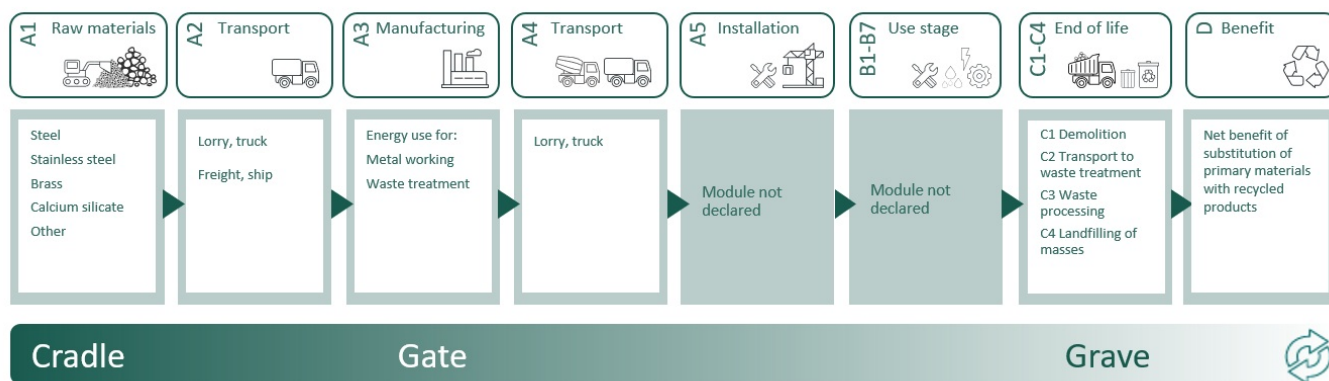
Specific data for the product composition are provided by the manufacturer. The data represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on EPDs according to EN 15804 and different LCA databases. The data quality of the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

| Materials                                 | Source                 | Data quality | Year |
|-------------------------------------------|------------------------|--------------|------|
| Chemical                                  | ecoinvent 3.6          | Database     | 2019 |
| Filter, mineral based                     | ecoinvent 3.6          | Database     | 2019 |
| Fire-, heat- and UV-stabilizers           | ecoinvent 3.6          | Database     | 2019 |
| Metal - Aluminium                         | ecoinvent 3.6          | Database     | 2019 |
| Metal - Brass                             | ecoinvent 3.6          | Database     | 2019 |
| Metal - Stainless steel                   | ecoinvent 3.6          | Database     | 2019 |
| Packaging - Pallet                        | ecoinvent 3.6          | Database     | 2019 |
| Packaging - Paper                         | ecoinvent 3.6          | Database     | 2019 |
| Packaging - Plastic                       | ecoinvent 3.6          | Database     | 2019 |
| Wood - Medium Density Fibreboard (MDF)    | ecoinvent 3.6          | Database     | 2019 |
| Metal - Galvanized Steel                  | ecoinvent 3.6          | Database     | 2020 |
| Glass fibre reinforced plastic, polyamide | Modified ecoinvent 3.6 | Database     | 2019 |
| Mineral                                   | Modified ecoinvent 3.6 | Database     | 2019 |
| Motor                                     | Modified 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:

CE-compliant smoke control damper according to EN 12101-8.

Meets the maximum possible performance characteristics for smoke control dampers according to classification standard EN 13501-4.

Use in load-bearing structures (solid and lightweight partition walls and ceiling slabs) to ensure fire integrity (fire compartmentation).

For the ducts and shafts of heat and smoke exhaust systems.

For pressure differential systems, mechanical smoke extract systems, gas extinguishing systems and for providing additional supply air.

Control input signal from the fire alarm system and integration into the central BMS with TROXNETCOM.

Remote signalling with open/close actuator and end position feedback.

Cmod = for smoke extract and ventilation in combined systems, which allows for pneumatic volume flow rate balancing as the damper blade can take intermediate positions.

Nominal sizes 200 × 200 – 1500 × 800 mm, for smoke gas flow rates up to 43200 m³/h or 12000 l/s at 10 m/s.

Low pressure losses with high upstream velocities, standard value of 10 m/s and above.

Automatic release (AA), option of manual override (MA).

Simple and quick dry mortarless installation in solid and lightweight partition walls 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                                 | 26,01         |                         |       |                     |
| 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                                    | 1,49          |                         |       |                     |
| Waste treatment per kg Bulk iron waste, excluding reinforcement, sorting plant (kg)        | kg                                    | 0,86          |                         |       |                     |
| Waste treatment per kg Hazardous waste, incineration (kg)                                  | kg                                    | 0,00          |                         |       |                     |
| Waste treatment per kg Plastics, incineration (kg)                                         | kg                                    | 0,02          |                         |       |                     |
| Waste treatment per kg Wood, incineration with fly ash extraction (kg)                     | kg                                    | 0,04          |                         |       |                     |
| Disposal (C4)                                                                              | Unit                                  | Value         |                         |       |                     |
| Landfilling of ashes from incineration of Plastics, process per kg ashes and residues (kg) | kg                                    | 0,00          |                         |       |                     |
| Landfilling of ashes from incineration of Wood, process per kg ashes and residues (kg)     | kg                                    | 0,00          |                         |       |                     |
| Landfilling of ashes from incineration per kg Hazardous waste, from incineration (kg)      | kg                                    | 0,00          |                         |       |                     |
| Waste treatment per kg Brass slag, to landfill, residual material landfill (kg)            | kg                                    | 0,01          |                         |       |                     |
| Waste treatment per kg Copper slag, to landfill, residual material landfill (kg)           | kg                                    | 0,01          |                         |       |                     |
| Waste, aluminium, to landfill (kg)                                                         | kg                                    | 0,01          |                         |       |                     |
| Waste, hazardous waste, to average treatment - A3, inkl. transp. (kg)                      | kg                                    | 0,00          |                         |       |                     |
| Waste, hazardous waste, to landfill (kg)                                                   | kg                                    | 24,24         |                         |       |                     |
| Waste, inert waste, to landfill (kg)                                                       | kg                                    | 0,01          |                         |       |                     |
| Waste, mineral wool, to landfill (kg)                                                      | kg                                    | 0,00          |                         |       |                     |
| Waste, plastic, mixture, to landfill (kg)                                                  | kg                                    | 0,02          |                         |       |                     |
| Waste, scrap steel, to landfill (kg)                                                       | kg                                    | 0,13          |                         |       |                     |
| Benefits and loads beyond the system boundaries (D)                                        | Unit                                  | Value         |                         |       |                     |
| Substitution of electricity (MJ)                                                           | MJ                                    | 0,03          |                         |       |                     |
| Substitution of primary aluminium with net scrap (kg)                                      | kg                                    | 0,09          |                         |       |                     |
| Substitution of primary Brass with net scrap (kg)                                          | kg                                    | 0,04          |                         |       |                     |
| Substitution of primary copper with net scrap (kg)                                         | kg                                    | 0,05          |                         |       |                     |
| Substitution of primary steel with net scrap (kg)                                          | kg                                    | 0,87          |                         |       |                     |
| Substitution of thermal energy, district heating (MJ)                                      | MJ                                    | 0,47          |                         |       |                     |

## 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 | 2,27E+01  | 4,05E+00 | 3,43E-02 | 2,53E-01 | 1,31E-01 | 5,22E+00 | -2,07E+00 |  |
|  GWP-fossil                       | kg CO <sub>2</sub> -eq | 3,02E+01  | 4,05E+00 | 3,43E-02 | 2,53E-01 | 5,60E-02 | 5,17E+00 | -2,05E+00 |  |
|  GWP-biogenic                     | kg CO <sub>2</sub> -eq | -7,52E+00 | 1,68E-03 | 6,43E-06 | 1,05E-04 | 7,50E-02 | 4,53E-03 | -5,69E-03 |  |
|  GWP-luluc                        | kg CO <sub>2</sub> -eq | 4,69E-02  | 1,44E-03 | 2,70E-06 | 9,01E-05 | 2,40E-06 | 4,57E-02 | -1,62E-02 |  |
|  ODP                              | kg CFC11 -eq           | 2,01E-06  | 9,18E-07 | 7,41E-09 | 5,74E-08 | 8,77E-10 | 2,62E-07 | -1,97E-04 |  |
|  AP                               | mol H <sup>+</sup> -eq | 2,66E-01  | 1,16E-02 | 3,59E-04 | 7,28E-04 | 2,20E-05 | 2,42E-02 | -4,58E-02 |  |
|  EP-FreshWater                    | kg P -eq               | 2,14E-03  | 3,24E-05 | 1,25E-07 | 2,02E-06 | 1,57E-07 | 2,31E-04 | -3,49E-04 |  |
|  EP-Marine                        | kg N -eq               | 3,01E-02  | 2,30E-03 | 1,58E-04 | 1,44E-04 | 7,70E-06 | 4,88E-03 | -3,27E-03 |  |
|  EP-Terrestrial                   | mol N -eq              | 4,54E-01  | 2,58E-02 | 1,74E-03 | 1,61E-03 | 8,13E-05 | 5,22E-02 | -4,19E-02 |  |
|  POCP                             | kg NMVOC -eq           | 1,05E-01  | 9,87E-03 | 4,78E-04 | 6,17E-04 | 2,05E-05 | 2,56E-02 | -1,39E-02 |  |
|  ADP-minerals&metals <sup>1</sup> | kg Sb -eq              | 4,40E-03  | 1,12E-04 | 5,26E-08 | 6,99E-06 | 3,38E-08 | 2,98E-05 | -1,06E-03 |  |
|  ADP-fossil <sup>1</sup>          | MJ                     | 3,29E+02  | 6,13E+01 | 4,72E-01 | 3,83E+00 | 3,93E-02 | 5,68E+01 | -2,13E+01 |  |
|  WDP <sup>1</sup>                 | m <sup>3</sup>         | 1,05E+03  | 5,92E+01 | 1,00E-01 | 3,70E+00 | 1,35E+00 | 4,11E+01 | -4,07E+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 | 2,18E-06 | 2,48E-07 | 9,49E-09 | 1,55E-08 | 2,23E-10 | 4,41E-07 | -2,11E-07 |
|  IRP <sup>2</sup>    | kgBq U235 -eq     | 9,00E-01 | 2,68E-01 | 2,02E-03 | 1,67E-02 | 3,00E-04 | 8,38E-02 | -5,02E-02 |
|  ETP-fw <sup>1</sup> | CTUe              | 1,90E+03 | 4,54E+01 | 2,58E-01 | 2,84E+00 | 2,29E-01 | 1,51E+02 | -4,00E+02 |
|  HTP-c <sup>1</sup>  | CTUh              | 9,16E-08 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 9,00E-12 | 2,36E-08 | -1,15E-08 |
|  HTP-nc <sup>1</sup> | CTUh              | 1,68E-06 | 4,96E-08 | 2,34E-10 | 3,10E-09 | 1,94E-10 | 1,96E-07 | -3,26E-07 |
|  SQP <sup>1</sup>    | dimensionless     | 1,10E+03 | 4,28E+01 | 5,99E-02 | 2,68E+00 | 1,81E-02 | 1,44E+02 | -5,10E+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 =  $9,0 \cdot 10^{-3}$  = 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             | 1,17E+02 | 8,77E-01 | 2,55E-03 | 5,48E-02 | 9,69E-03  | 2,00E+01 | -5,52E+00 |  |
|  PERM  | MJ             | 6,72E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | -2,83E-01 | 0,00E+00 | 0,00E+00  |  |
|  PERT  | MJ             | 1,84E+02 | 8,77E-01 | 2,55E-03 | 5,48E-02 | -2,73E-01 | 2,00E+01 | -5,52E+00 |  |
|  PENRE | MJ             | 3,19E+02 | 6,13E+01 | 4,72E-01 | 3,83E+00 | 3,93E-02  | 5,69E+01 | -2,13E+01 |  |
|  PENRM | MJ             | 1,03E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | -1,35E+00 | 0,00E+00 | 0,00E+00  |  |
|  PENRT | MJ             | 3,29E+02 | 6,13E+01 | 4,72E-01 | 3,83E+00 | -1,31E+00 | 5,69E+01 | -2,13E+01 |  |
|  SM    | kg             | 6,67E-01 | 0,00E+00 | 2,32E-04 | 0,00E+00 | 9,48E-06  | 5,24E-01 | 2,51E-02  |  |
|  RSF   | MJ             | 1,09E+00 | 3,14E-02 | 6,28E-05 | 1,96E-03 | 2,08E-04  | 4,23E-02 | 3,32E-02  |  |
|  NRSF  | MJ             | 7,47E-01 | 1,12E-01 | 9,24E-04 | 7,01E-03 | 1,01E-05  | 4,53E+00 | 1,01E+00  |  |
|  FW    | m <sup>3</sup> | 4,24E-01 | 6,55E-03 | 2,43E-05 | 4,09E-04 | 5,85E-05  | 3,05E-02 | -2,93E-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   | 2,37E-01 | 3,16E-03 | 1,39E-05 | 1,97E-04 | 1,10E-06 | 2,42E+01 | -4,56E-03 |
|  NHWD | kg   | 9,16E+00 | 2,98E+00 | 5,59E-04 | 1,86E-01 | 1,76E-03 | 2,02E-01 | -7,42E-01 |
|  RWD  | kg   | 9,52E-04 | 4,17E-04 | 3,28E-06 | 2,61E-05 | 1,11E-07 | 1,03E-07 | -4,68E-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   | 8,37E-01 | 0,00E+00 | 2,28E-04 | 0,00E+00 | 1,49E+00 | 3,78E-04 | -3,02E-03 |
|  MER | kg   | 4,41E-04 | 0,00E+00 | 7,06E-07 | 0,00E+00 | 4,59E-02 | 2,47E-07 | -3,80E-04 |
|  EEE | MJ   | 2,41E-02 | 0,00E+00 | 2,42E-06 | 0,00E+00 | 3,07E-02 | 3,89E-06 | -1,66E-03 |
|  EET | MJ   | 3,64E-01 | 0,00E+00 | 3,66E-05 | 0,00E+00 | 4,65E-01 | 5,89E-05 | -2,51E-02 |

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 | 2,05E-02            |
| Biogenic carbon content in accompanying packaging | kg C | 2,07E+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                         | Data 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 no substances on the REACH Candidate list at or above 100 ppm, 0,01 % by weight.

### 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 | 3,05E+01 | 4,05E+00 | 3,43E-02 | 2,53E-01 | 5,60E-02 | 5,22E+00 | -2,45E+00 |

GWPI-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.

|                                                                                    |                                                                                                                      |                                                                                                       |
|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
|                                                                                    | <b>Program operator and publisher</b><br>The Norwegian EPD Foundation<br>Post Box 5250 Majorstuen, 0303 Oslo, Norway | Phone: +47 23 08 80 00<br>e-mail: post@epd-norge.no<br>web: www.epd-norge.no                          |
|   | <b>Owner of the declaration:</b><br>TROX Group<br>Heinrich-Trox-Platz 1, 47506 Neukirchen-Vluyn                      | Phone: +49 2845 2020<br>e-mail: productsustainability-de@troxgroup.com<br>web: https://www.trox.de/en |
|   | <b>Author of the Life Cycle Assessment</b><br>LCA.no AS<br>Dokka 6B, 1671                                            | Phone: +47 916 50 916<br>e-mail: post@lca.no<br>web: www.lca.no                                       |
|   | <b>Developer of EPD generator</b><br>LCA.no AS<br>Dokka 6B, 1671 Kråkerøy                                            | Phone: +47 916 50 916<br>e-mail: post@lca.no<br>web: www.lca.no                                       |
|  | ECO Platform<br>ECO Portal                                                                                           | web: www.eco-platform.org<br>web: ECO Portal                                                          |