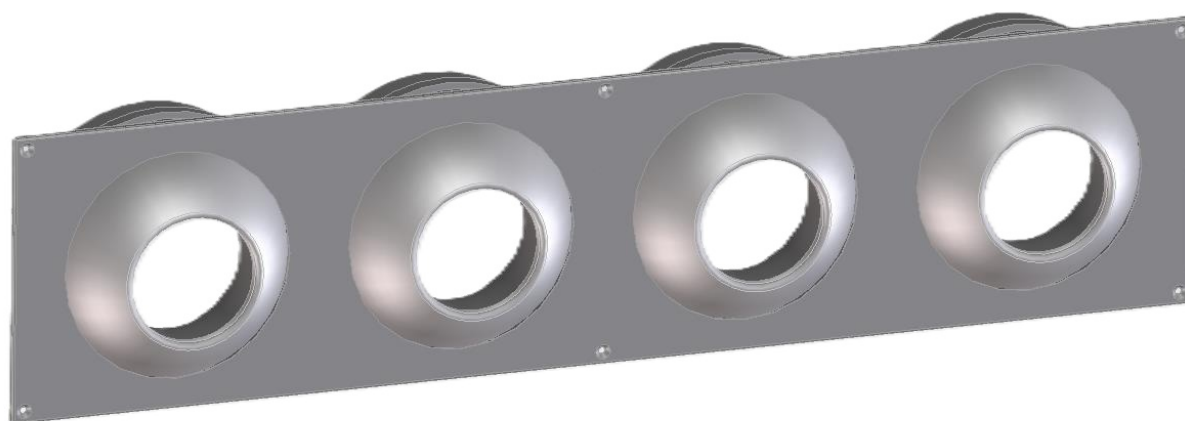


Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

DUE-V-Q-M6-LB/160/1345x250/0/0/9010-GE50



TROX[®] TECHNIK
The art of handling air

Owner of the declaration:

TROX España

Product:

DUE-V-Q-M6-LB/160/1345x250/0/0/9010-GE50

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:

EPD-Global

Declaration number:

NEPD-18564-22801

Issue date:

13.10.2026

Valid to:

13.10.2031

EPD software:

LCAno EPD generator ID: 1812784

EPD-Global

General information

Product

DUE-V-Q-M6-LB/160/1345x250/0/0/9010-GE50

Program operator:

EPD-Global
Post Box 5250 Majorstuen, 0303 Oslo, Norway
Phone: +47 977 22 020
web: www.epd-global.com

Declaration number:

NEPD-18564-22801

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-Global shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

Declared unit:

1 pcs DUE-V-Q-M6-LB/160/1345x250/0/0/9010-GE50

Declared unit with option:

A1-A3, A4, A5, B6, C1, C2, C3, C4, D

Functional unit:

No relevant

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-Global'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-Global, and iii) the process is reviewed annually by an independent third party verifier. See Appendix G of EPD-Global'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-Global'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 España
Contact person: Salvador Espinosa Aranzazu
Phone:
e-mail: arancha.salvador@troxgroup.com

Manufacturer:

TROX España

Place of production:

TROX España
Poligono Industrial La Cartuja
E-50720 Zaragoza, Spain

Management system:

ISO 9001 ISO 14001

Organisation no:

Issue date:

13.10.2026

Valid to:

13.10.2031

Year of study:

2025

Comparability:

EPDs of construction products may not be comparable if they do not comply with EN 15804 and are not viewed 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-Global.
Approval number: NEPDT72

Developer of EPD: Adriana Romeo

Reviewer of company-specific input data and EPD: Salvador Espinosa Aranzazu

Approved:



Håkon Hauan, CEO EPD-Global

Product

Product description:

The multi-jet nozzles consist of spherical discharge nozzles fitted into a plate complete with a face mounting flange, the plate can either be flat or curved depending on whether the array is to be fitted to a rectangular or circular duct, the linear nozzle array can be in one or two rows. The multi-jet nozzles type DUE-M are suitable for almost all situations because of the wide range of variants available. Because of their low height they are suitable for all types of space and can be easily installed.

Product specification

Multi jet nozzles type DUE-M are used for preference where the supply air from the diffuser has to travel a large distance to a small occupied zone. They are suitable for long throw distances with optimum acoustic properties, preferably used for heating and cooling in critical areas. The manual adjustment allows variation to compensate for changing temperature differences. Adjustment angular range 30° upwards to 30° downwards for construction S. It can also be rotated through 360° with construction V. DUE-M jet nozzles are recommended for circular, rectangular ducts or for direct wall mounting. On request can be provided with a rear mounted perforated steel plate for control of volume flow rate. Powder coated in RAL 9010 colour, other RAL colours available.

Materials	kg	%
Adhesive and sealant	0.1357	2.96
Metal - Aluminium	1.96	42.75
Metal - Galvanized Steel	2.07	45.24
Plastic - Acrylonitrile butadiene styrene (ABS)	0.414	9.05
Total	4.58	100.00

Packaging	kg	%
Packaging - Cardboard	0.1666	58.54
Packaging - Plastic	0.118	41.46
Total incl. packaging	4.86	100.00

Technical data:

Size: 50, 75, 100, 125, 160, 200, 250, 315, 400

Number of multi jet nozzles: from 2 to 12 (depends on the size)

One or two rows

Maximum air flow rate at 40 dB(A): 1347 l/s or 4850 m³/h (DUE-V-Q-M6/250)

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 DUE-V-Q-M6-LB/160/1345x250/0/0/9010-GE50

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.

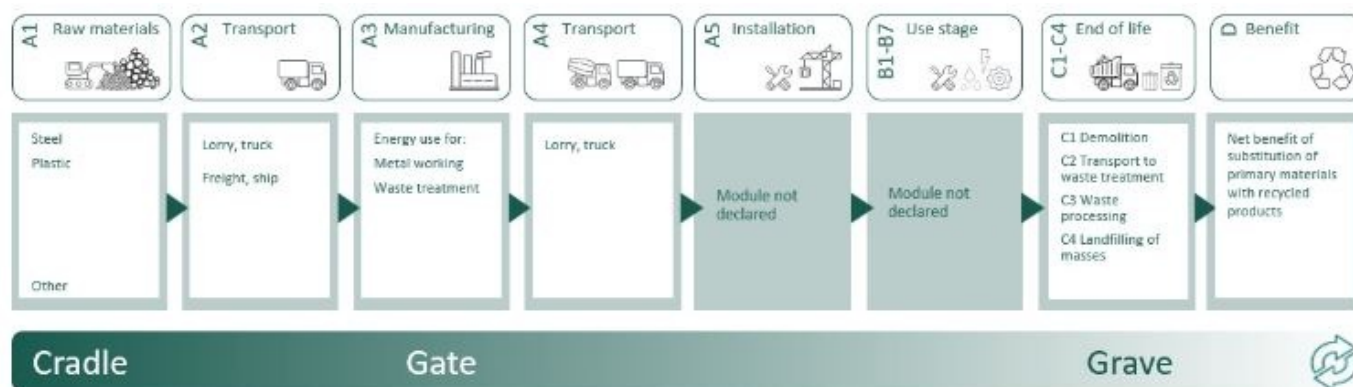
Materials	Source	Data quality	Year
Adhesive and sealant	ecoinvent 3.10.1	Database	2023
Metal - Aluminium	Modified ecoinvent 3.10.1	Database	2023
Metal - Galvanized Steel	ecoinvent 3.10.1	Database	2023
Metal - Galvanized Steel	Modified ecoinvent 3.10.1	database	2023
Packaging - Cardboard	Modified ecoinvent 3.10.1	Database	2023
Packaging - Plastic	ecoinvent 3.10.1	Database	2023
Plastic - Acrylonitrile butadiene styrene (ABS)	Modified ecoinvent 3.10.1	Database	2023

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	X	MND	MND	MND	MND	MND	X	MND	X	X	X	X	X

System boundary:

Declared unit with options: A1-A3, A4, A5, B6, C1, C2, C3, C4, D



Additional technical information:

TROX multi jet nozzles are suitable for installation on rectangular or circular ducts.

The installation on circular duct can be made by a direct connection (type DUE-S/V-QR-Mx or DUE-S-RR-Mx).

LCA: Scenarios and additional technical information

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

The product does not consume operational energy during the use phase.

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)	38.8 %	600.00	0.044	l/tkm	26.40
Assembly (A5)	Unit	Value			
Waste, plastic, mixture, to average treatment (kg)	kg	0.118			
Waste, cardboard and paper, to average treatment (kg)	kg	0.1666			
Operational energy (B6)	Unit	Value			
Electricity, Spain (kWh)	kWh	0.00			
De-construction demolition (C1)	Unit	Value			
Demolition of building per kg of ventilation product (kg)	kg	3.83			
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)	38.8 %	50.00	0.044	l/tkm	2.20
Waste processing (C3)	Unit	Value			
Materials to recycling (kg)	kg	3.68			
Waste treatment per kg Plastics, incineration (kg)	kg	0.207			
Waste treatment per kg Hazardous waste, incineration (kg)	kg	0.2536			
Disposal (C4)	Unit	Value			
Waste, aluminium, to landfill (kg)	kg	0.1724			
Landfilling of ashes from incineration of Plastics, process per kg ashes and residues (kg)	kg	0.004869			
Waste, plastic, mixture, to landfill (kg)	kg	0.207			
Waste, scrap steel, to landfill (kg)	kg	0.1717			
Landfilling of ashes from incineration per kg Hazardous waste, from incineration (kg)	kg	0.04794			
Waste, hazardous waste, to landfill (kg)	kg	0.2536			
Benefits and loads beyond the system boundaries (D)	Unit	Value			
Substitution of primary aluminium with net scrap (kg)	kg	1.82			
Substitution of thermal energy, district heating (MJ)	MJ	0.005715			
Substitution of electricity (MJ)	MJ	0.0003778			
Substitution of primary steel with net scrap (kg)	kg	0.5218			

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	A5	B6	C1	C2	C3	C4	D	
 GWP-total	kg CO ₂ -eq	4.37E+01	5.78E-01	1.68E-01	0.00E+00	5.53E-03	4.81E-02	1.10E+00	1.04E-01	-1.35E+01	
 GWP-fossil	kg CO ₂ -eq	4.31E+01	5.77E-01	1.68E-01	0.00E+00	5.53E-03	4.81E-02	1.10E+00	1.04E-01	-1.31E+01	
 GWP-biogenic	kg CO ₂ -eq	2.78E-01	4.45E-04	3.35E-05	0.00E+00	9.27E-07	3.71E-05	2.68E-03	3.88E-05	-7.01E-02	
 GWP-luluc	kg CO ₂ -eq	3.66E-01	2.07E-04	2.39E-06	0.00E+00	5.66E-07	1.73E-05	9.77E-05	2.65E-04	-3.03E-01	
 ODP	kg CFC11 -eq	1.07E-06	1.22E-08	1.57E-10	0.00E+00	8.40E-11	1.01E-09	6.04E-09	2.11E-09	-2.64E-06	
 AP	mol H ⁺ -eq	2.39E-01	1.20E-03	5.29E-05	0.00E+00	4.99E-05	1.00E-04	7.32E-04	2.95E-04	-8.21E-02	
 EP-FreshWater	kg P -eq	1.76E-02	3.88E-05	7.43E-07	0.00E+00	1.60E-07	3.24E-06	1.78E-04	1.95E-05	-7.16E-03	
 EP-Marine	kg N -eq	3.42E-02	2.88E-04	5.42E-05	0.00E+00	2.31E-05	2.40E-05	2.23E-04	1.01E-04	-1.14E-02	
 EP-Terrestrial	mol N -eq	4.63E-01	3.11E-03	2.45E-04	0.00E+00	2.53E-04	2.59E-04	2.05E-03	8.08E-04	-1.04E-01	
 POCP	kg NMVOC -eq	1.38E-01	2.00E-03	7.15E-05	0.00E+00	7.56E-05	1.66E-04	8.26E-04	2.82E-04	-4.57E-02	
 ADP-minerals&metals ¹	kg Sb-eq	3.16E-04	1.92E-06	2.67E-08	0.00E+00	1.98E-09	1.60E-07	1.80E-06	1.49E-07	-2.68E-05	
 ADP-fossil ¹	MJ	6.92E+02	8.12E+00	9.51E-02	0.00E+00	7.23E-02	6.76E-01	2.88E+00	8.29E-01	-2.04E+02	
 WDP ¹	m ³	5.09E+01	4.03E-02	1.19E-02	0.00E+00	1.81E-04	3.36E-03	7.12E-02	2.92E+00	-2.52E+01	

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"

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	A5	B6	C1	C2	C3	C4	D
 PM	Disease incidence	2.46E-06	4.26E-08	5.59E-10	0.00E+00	1.42E-09	3.55E-09	7.45E-09	5.93E-09	-9.98E-07
 IRP ²	kgBq U235 -eq	7.85E+00	1.05E-02	1.85E-04	0.00E+00	3.20E-05	8.72E-04	1.48E-02	2.38E-03	-3.51E+00
 ETP-fw ¹	CTUe	2.42E+02	1.08E+00	3.78E-01	0.00E+00	3.98E-03	9.00E-02	9.96E+00	1.19E+01	-3.07E+01
 HTP-c ¹	CTUh	5.13E-08	0.00E+00	1.00E-11	0.00E+00	0.00E+00	0.00E+00	7.34E-10	7.60E-11	-2.79E-08
 HTP-nc ¹	CTUh	4.25E-07	6.08E-09	4.53E-10	0.00E+00	8.00E-12	5.07E-10	3.33E-09	9.95E-10	-1.71E-07
 SQP ¹	dimensionless	1.08E+02	4.91E+00	5.30E-02	0.00E+00	5.07E-03	4.09E-01	4.91E-01	1.71E+00	-1.46E+01

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"

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	A5	B6	C1	C2	C3	C4	D	
 PERE	MJ	1.39E+02	1.42E-01	2.88E-03	0.00E+00	4.58E-04	1.18E-02	1.80E-01	2.22E-01	-8.05E+01	
 PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
 PERT	MJ	1.39E+02	1.42E-01	2.88E-03	0.00E+00	4.58E-04	1.18E-02	1.80E-01	2.22E-01	-8.05E+01	
 PENRE	MJ	6.73E+02	8.12E+00	9.51E-02	0.00E+00	7.23E-02	6.76E-01	2.88E+00	8.29E-01	-2.04E+02	
 PENRM	MJ	1.89E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.32E+01	0.00E+00	0.00E+00	
 PENRT	MJ	6.92E+02	8.12E+00	9.51E-02	0.00E+00	7.23E-02	6.76E-01	-2.03E+01	8.29E-01	-2.04E+02	
 SM	kg	2.75E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-5.91E-01	
 RSF	MJ	3.44E-02	4.77E-05	1.39E-06	0.00E+00	7.85E-08	3.97E-06	1.91E-05	3.02E-04	-6.36E-04	
 NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.24E-03	-1.73E-04	
 FW	m ³	1.20E+00	1.11E-03	2.07E-04	0.00E+00	4.78E-06	9.21E-05	1.74E-03	6.07E-04	-5.55E-01	

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"

End of life - Waste											
Indicator	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D	
	HWD	kg	8.10E+00	1.18E-02	2.14E-03	0.00E+00	8.05E-05	9.83E-04	2.62E-01	2.54E-01	-3.54E+00
	NHWD	kg	5.53E+02	2.49E-01	1.70E-01	0.00E+00	1.10E-03	2.07E-02	2.29E-01	5.99E-01	-3.30E+01
	RWD	kg	1.92E-03	2.60E-06	2.08E-08	0.00E+00	7.86E-09	2.17E-07	4.40E-08	3.14E-07	-9.31E-04

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"

End of life - Output flow											
Indicator	Unit	A1-A3	A4	A5	B6	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	0.00E+00	0.00E+00
	MFR	kg	4.24E-01	0.00E+00	1.92E-01	0.00E+00	0.00E+00	0.00E+00	3.68E+00	1.86E-05	0.00E+00
	MER	kg	0.00E+00	0.00E+00	1.48E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.54E-07	0.00E+00
	EEE	MJ	2.28E-04	0.00E+00	2.49E-05	0.00E+00	0.00E+00	0.00E+00	4.81E-03	1.87E-03	0.00E+00
	EET	MJ	1.49E-04	0.00E+00	4.63E-05	0.00E+00	0.00E+00	0.00E+00	1.98E-03	1.19E-03	0.00E+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 = $9.0 \cdot 10^{-3}$ = 0.009"

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, low voltage, photovoltaic, roof installation, single-Si, panel, mounted (kWh) - Spain	ecoinvent 3.10.1	74.91	g CO ₂ -eq/kWh

Dangerous substances

The product contains no substances given by the REACH Candidate list.

Indoor environment

not relevant

Additional Environmental Information

Additional environmental impact indicators required in NPCR Part A for construction products										
Indicator	Unit	A1-A3	A4	A5	B6	C1	C2	C3	C4	D
GWPIOBC	kg CO ₂ -eq	4.36E+01	5.78E-01	1.68E-01	0.00E+00	5.53E-03	4.81E-02	1.10E+00	1.05E-01	-1.35E+01

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.

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NPCR 030 Part B for Ventilation components, Ver. 1.0, 18.05.2021, EPD Norway.

EN ISO 9001:2015 - Quality management systems.

EN ISO 14001:2015 - Environmental management systems.

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