



Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

S-B





Systemair Production a.s.

Owner of the declaration:

Product:

Declared unit:

This declaration is based on Product Category Rules: CEN Standard EN 15804:2012+A2:2019 serves as core

NPCR 030:2021 Part B for ventilation components

Program operator:

The Norwegian EPD Foundation

Declaration number:

Registration number:

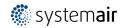
Issue date:

Valid to:

EPD software:

LCAno EPD generator ID: 308504

The Norwegian EPD Foundation



General information

Product

S-B

Program operator:

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

Phone: +47 977 22 020 web: www.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 S-B

Declared unit with option:

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

Functional unit:

Not declared

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:

Systemair Production a.s. Contact person: Peter Sopkuliak Phone: +421 2 4020 3111 e-mail: production@systemair.sk

Manufacturer:

Systemair Production a.s.

Place of production:

Systemair Production a.s. Hlavná 371 900 43 Kalinkovo, Slovakia

Management system:

ISO 9001, ISO 14001

Organisation no:

SK2020363290

Issue date:

Valid to:

Year of study:

2023

Comparability:

EPDs of construction products may not be comparable if they do not comply with EN 15804 and are not 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. NEPDT75 Systemair AB

Developer of EPD: Peter Sopkuliak

Reviewer of company-specific input data and EPD: Adam Began

Approved:

Håkon Hauan, CEO EPD-Norge



Product

Product description:

The S-BM2 smoke damper is a smoke protection device designed with compartmentalization to effectively prevent the spread of toxic gases and smoke. Its versatile design makes it suitable for various applications, including residential buildings, industrial facilities, hospitals, and more.

Product specification

The S-BM2 smoke dampers are available in various options and sizes.

Specific EPD data is provided as a reference for the S-BM2-200X425-00-B24 model.

Correction factors for other sizes can be estimated using the table in the Technical Data section below.

Materials	kg	%
Adhesive	0,00	0,01
Motor	0,85	3,16
Plastic - Polyethylene	0,03	0,13
Metal - Aluminium	0,03	0,10
Metal - Steel	0,40	1,49
Chemical	25,58	95,10
Plastics	0,01	0,02
Total	26,90	100,00
De also situ u	1	0/

Packaging	kg	%
Packaging - Cardboard	0,09	1,30
Packaging - label, supercalendered	0,00	0,03
Packaging - Plastic	0,10	1,41
Packaging - Wood	6,62	97,25
Total incl. packaging	33,70	100,00

Technical data:

Technical details can be found at the following link:

https://design.systemair.com.

To estimate the Global Warming Potential (GWPtot) correction factor for specific product size and type, use the table below. For sizes not listed, calculate the correction factor using the provided equation.

Each size and type have a specific correction factor. The correction factor is calculated by multiplying a coefficient by area "A" in m², derived from the product's nominal dimensions and adding a constant.

The equation for each type is as follows:

S-BA-2 factor = 1,1969454 * A + 0,26057

S-BM-2 factor = 2,509158 * A + 0,82667

These equations enable you to estimate GWPtot correction factors for sizes not listed in the table. By using "A" for your desired product size, you can determine the GWPtot correction factor.

Product	Size	Weight (kg)	GWP-total (A1-A3) (kg CO2 eq)	Factor (-)
S-BA2	150x250	7,38	20,11	0,245
S-BA2	200x500	12,73	33,74	0,411
S-BA2	400x625	18,64	48,76	0,594
S-BA2	600x875	29,07	74,93	0,912
S-BA2	800x1000	38,11	97,87	1,191
S-BM2	125x325	26,51	61,84	0,753
S-BM2	200x425	33,7	82,15	1
S-BM2	400x825	75,03	151,03	1,838
S-BM2	500x1025	90,39	193,65	2,357
S-BM2	1000x825	99,38	220,49	2,684

Market:

Europe.

Reference service life, product

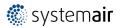
Dependent on the application of the product.

Reference service life, building or construction works

Not declared.

LCA: Calculation rules

Declared unit:



1 pcs S-B

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.

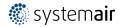
Allocation:

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.

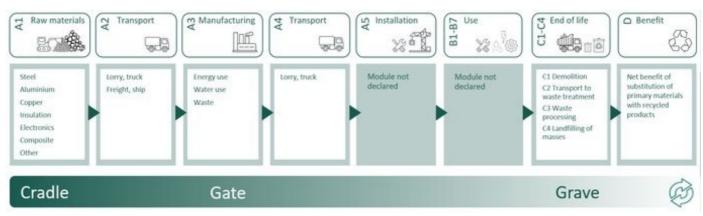
Materials	Source	Data quality	Year
Adhesive	ecoinvent 3.6	Database	2019
Chemical	ecoinvent 3.6	Database	2019
Metal - Aluminium	Modified ecoinvent 3.6	Database	2019
Metal - Steel	ecoinvent 3.6	Database	2019
Motor	ecoinvent 3.6	Database	2019
Packaging - Cardboard	ecoinvent 3.6	Database	2019
Packaging - label, supercalendered	Ecoinvent 3.6	Database	2019
Packaging - Plastic	ecoinvent 3.6	Database	2019
Packaging - Wood	Modified ecoinvent 3.6	Database	2019
Plastic - Polyethylene	ecoinvent 3.6	Database	2019
Plastics	ecoinvent 3.6	Database	2019



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

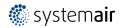
Р	Product stage			Construction installation stage		Use stage				End of I	ife stage		Beyond the system boundaries			
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De- construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery- Recycling-potential
A1	A2	A3	A4	A5	B1	B2	В3	B4	B5	В6	В7	C1	C2	C3	C4	D
Χ	Χ	Χ	Χ	MND	MND	MND	MND	MND	MND	MND	MND	X	Χ	Χ	Χ	X

System boundary:



Additional technical information:

For comprehensive technical information and documentation, please refer to the official Systemair website at https://www.systemair.com or the dedicated product-specific site at https://design.systemair.com.

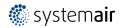


LCA: Scenarios and additional technical information

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

For A4 and C2, a generic transportation distance (EURO6 truck) of 300 km and 50 km, respectively, is declared. The true transportation distance can be provided in the project-specific 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 %	300	0,043	l/tkm	12,90
De-construction demolition (C1)	Unit	Value			
Demolition of building per kg of ventilation product (kg)	kg/DU	26,90			
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			
Waste treatment per kg Plastics, from incineration (kg)	kg	0,0029			
Waste treatment per kg Hazardous waste, incineration (kg)	kg	25,58			
Waste treatment per kg bulk waste, excluding reinforcement, sorting plant (kg)	kg	0,85			
Waste treatment per kg Polyethylene (PE), incineration (kg)	kg	0,016			
Materials to recycling (kg)	kg	1,15			
Disposal (C4)	Unit	Value			
Waste, steel, to landfill (kg)	kg	0,10			
Landfilling of ashes from incineration of Polyethylene (PE), process per kg ashes and residues (kg)	kg	0,00059			
Landfilling of ashes from incineration of Plastics, process per kg ashes and residues (kg)	kg	0,000069			
Waste, plastic, mixture, to landfill (kg)	kg	0,019			
Landfilling of ashes from incineration per kg Hazardous waste, process per kg ashes and residues (kg)	kg	4,83			
Waste, copper, to landfill (kg)	kg	0,013			
Waste, aluminium, to landfill (kg)	kg	0,0072			
Benefits and loads beyond the system boundaries (D)	Unit	Value			
Substitution of primary copper with net scrap (kg)	kg	0,051			
Substitution of electricity (MJ)	MJ	0,063			
Substitution of thermal energy, district heating (MJ)	MJ	0,96			
Substitution of primary steel with net scrap (kg)	kg	0,81			
Substitution of primary aluminium with net scrap (kg)	kg	0,071			



LCA: Results

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

Environ	mental impact								
	Indicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
	GWP-total	kg CO ₂ -eq	8,21E+01	1,65E+00	3,55E-02	2,75E-01	5,69E+01	2,12E+00	-1,67E+00
	GWP-fossil	kg CO ₂ -eq	8,16E+01	1,65E+00	3,55E-02	2,75E-01	5,68E+01	2,12E+00	-1,66E+00
	GWP-biogenic	kg CO ₂ -eq	3,97E-01	6,84E-04	6,65E-06	1,14E-04	1,42E-01	8,39E-04	-3,98E-03
	GWP-luluc	kg CO ₂ -eq	1,03E-01	5,88E-04	2,80E-06	9,80E-05	1,43E-02	2,04E-04	-1,27E-02
Ò	ODP	kg CFC11 -eq	9,25E-06	3,74E-07	7,67E-09	6,24E-08	6,50E-06	1,03E-07	-4,08E-04
CE CE	АР	mol H+ -eq	6,22E-01	4,75E-03	3,71E-04	7,91E-04	8,34E-02	4,19E-03	-2,96E-02
	EP-FreshWater	kg P -eq	4,26E-03	1,32E-05	1,29E-07	2,20E-06	1,36E-03	2,05E-05	-2,21E-04
	EP-Marine	kg N -eq	7,52E-02	9,39E-04	1,64E-04	1,57E-04	1,72E-02	1,09E-03	-2,33E-03
	EP-Terrestial	mol N -eq	1,02E+00	1,05E-02	1,80E-03	1,75E-03	1,94E-01	1,28E-02	-2,88E-02
	POCP	kg NMVOC -eq	2,47E-01	4,02E-03	4,94E-04	6,71E-04	5,44E-02	3,55E-03	-1,01E-02
	ADP-minerals&metals ¹	kg Sb-eq	8,25E-03	4,56E-05	5,44E-08	7,60E-06	1,98E-04	3,59E-06	-1,31E-04
	ADP-fossil ¹	MJ	1,03E+03	2,50E+01	4,88E-01	4,16E+00	2,38E+02	9,87E+00	-1,68E+01
<u>%</u>	WDP ¹	m^3	5,82E+03	2,42E+01	1,04E-01	4,03E+00	8,82E+02	2,53E+02	-3,09E+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

Remarks to environmental impacts

Smoke dampers directly affect the pressure drop / energy efficiency of the ventilation system and consequently the operational energy use of the building. To properly evaluate the environmental performance and impact of the product, these factors must be taken into account.

[&]quot;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



Additional	dditional environmental impact indicators								
l:	ndicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
	PM	Disease incidence	4,49E-06	1,01E-07	9,82E-09	1,69E-08	1,28E-06	2,83E-08	-1,63E-07
()°()	IRP ²	kgBq U235 -eq	4,39E+00	1,09E-01	2,09E-03	1,82E-02	1,08E+00	5,50E-02	-3,36E-02
	ETP-fw ¹	CTUe	2,41E+03	1,85E+01	2,67E-01	3,09E+00	1,15E+03	3,33E+01	-2,52E+02
44.	HTP-c ¹	CTUh	9,88E-08	0,00E+00	0,00E+00	0,00E+00	5,45E-08	1,85E-09	-8,62E-09
45° E	HTP-nc ¹	CTUh	1,96E-06	2,02E-08	2,42E-10	3,37E-09	3,33E-07	7,79E-08	-1,58E-07
	SQP ¹	dimensionless	5,89E+02	1,75E+01	6,20E-02	2,91E+00	9,39E+01	2,81E+01	-3,60E+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)

[&]quot;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

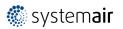
^{2.} This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.



Resource use									
	ndicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
	PERE	MJ	1,19E+02	3,57E-01	2,64E-03	5,96E-02	4,30E+01	1,21E+00	-4,46E+00
	PERM	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Ţ,	PERT	MJ	1,19E+02	3,57E-01	2,64E-03	5,96E-02	4,30E+01	1,21E+00	-4,46E+00
	PENRE	MJ	1,02E+03	2,50E+01	4,88E-01	4,16E+00	2,38E+02	9,87E+00	-1,67E+01
. Ag	PENRM	MJ	1,67E+00	0,00E+00	0,00E+00	0,00E+00	-1,67E+00	0,00E+00	0,00E+00
IA	PENRT	MJ	1,02E+03	2,50E+01	4,88E-01	4,16E+00	2,36E+02	9,87E+00	-1,67E+01
	SM	kg	8,30E-01	0,00E+00	2,40E-04	0,00E+00	9,37E-06	8,40E-07	3,64E-02
2	RSF	MJ	2,04E+00	1,28E-02	6,50E-05	2,13E-03	9,48E-01	2,20E-02	3,45E-02
	NRSF	MJ	2,60E+00	4,57E-02	9,56E-04	7,62E-03	9,97E-06	2,17E-01	9,24E-01
%	FW	m^3	1,59E+00	2,67E-03	2,51E-05	4,45E-04	2,20E-01	1,75E-02	-2,14E-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; SM = Use of secondary materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

[&]quot;Reading example: 9,0 E-03 = 9,0*10-3 = 0,009" *INA Indicator Not Assessed



End of life	End of life - Waste									
	In	dicator	Unit	A1-A3	A4	C1	C2	C3	C4	D
Ţ	Ā	HWD	kg	6,66E-01	1,29E-03	1,44E-05	2,15E-04	1,09E-06	5,09E-04	-3,41E-03
Ţ	Î	NHWD	kg	2,27E+01	1,21E+00	5,78E-04	2,02E-01	2,56E+01	4,98E+00	-6,11E-01
Ţ	<u></u>	RWD	kg	4,03E-03	1,70E-04	3,39E-06	2,84E-05	1,10E-07	5,40E-08	-3,20E-05

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

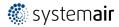
End of life - Output flo	End of life - Output flow								
Indicate	or	Unit	A1-A3	A4	C1	C2	C3	C4	D
∅>	CRU	kg	0,00E+00						
⇔>	MFR	kg	8,57E+00	0,00E+00	2,35E-04	0,00E+00	1,15E+00	2,54E-06	-1,42E-03
DØ	MER	kg	4,17E-01	0,00E+00	7,30E-07	0,00E+00	2,56E+01	6,69E-08	-1,87E-04
50	EEE	MJ	2,06E-01	0,00E+00	2,50E-06	0,00E+00	5,83E-02	2,91E-06	-4,59E-04
	EET	MJ	3,12E+00	0,00E+00	3,79E-05	0,00E+00	8,82E-01	4,40E-05	-6,94E-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*10-3 = 0,009" *INA Indicator Not Assessed

Biogenic Carbon Content								
Unit	At the factory gate							
kg C	0,00E+00							
kg C	0,00E+00							
	kg C							

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, Slovakia (kWh)	ecoinvent 3.6	519,35	g CO2-eq/kWh
Electricity, Solar, Slovakia (kWh)	ecoinvent 3.6	91,57	g CO2-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

Smoke dampers are used to compartmentalize and contain smoke in buildings. They are critical measures used to ensure safe escape routes in the event of a fire.

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	8,20E+01	1,65E+00	3,55E-02	2,75E-01	5,69E+01	2,12E+00	-2,02E+00

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

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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.

and norge	Program operator and publisher	Phone:	+47 977 22 020
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	Developer of EPD generator	Phone:	+47 916 50 916
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.no	Dokka 6A, 1671 Kråkerøy, Norway	web:	www.lca.no
ECO PLATFORM	ECO Platform	web:	www.eco-platform.org
VERIFIED	ECO Portal	web:	ECO Portal
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