

ENVIRONMENTAL PRODUCT DECLARATION

EPD Ref. No. 2024-0081-2

GUARD AIR CURTAINS



In accordance with EN 15804+A2

OWNER OF THE EPD:

SONNIGER S.A.
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DATE OF ISSUE:

16-07-2025

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VALIDITY DATE:

16-07-2030

Declared unit (DU): 1 unit

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1. GENERAL INFORMATION

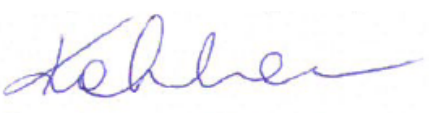
This Environmental Product Declaration (EPD) is developed in accordance with the European standard EN 15804 and ISO 14025. It contains the information on the impacts of the declared construction materials on the environment.

EPDs may not be comparable if they do not comply with the EN 15804 standard and if the core systems are not based on the same database.

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Declared product(s)	Guard air curtains - without a heating element Guard C - equipped with a water heat exchanger Guard W - equipped with an electric heater Guard E
Declaration reference number	EPD Ref. No. 2024-0081-2
PCR	PCR in accordance with EN 15804:2012+A2:2019
Date of issue	16-07-2025
Validity date	16-07-2030
Declared unit	1 unit
Life cycle analysis (LCA)	A1-A3, C1-C4, D modules
Service Life	Depending on the application, no more than 50 years
Reason for performing LCA	Bussines-to-bussines
Representativeness	Polish product, 2024

2. VERIFICATION

This Environmental Product Declaration (EPD) has been verified in accordance with ISO14025 and is valid for 5 years from the date of issue if the underlying data have not changed significantly.

CEN EN 15804 standard serves as the main PCR document.
Independent verification corresponding to ISO 14025:2010 ☐ Internal ☒ External
Third party verifier:  Monika Kotkiewicz, CERTBUD Sp. z o.o.
External verification of EPD: Monika Kotkiewicz, CERTBUD Sp. z o. o. Input data verification, LCA: Damian Bulski, CEexpert Verification of LCA: Dominika Młot, CERTBUD Sp. z o. o.



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3. MANUFACTURER

SONNIGER is a European supplier of modern, energy-efficient, and optimally sized industrial heating equipment. We specialize in air heaters and air curtains.

SONNIGER products offer a simple choice – our comprehensive product range precisely meets market needs. As a manufacturer of modern heaters and air curtains, **SONNIGER** provides the highest quality solutions, designed to meet customer expectations. **SONNIGER** consultants are a team of open, competent, dynamic, and collaborative individuals.

SONNIGER also embraces the **HEATING PARTNERS** philosophy, whose primary goal is to support the business development of heating companies. In addition to assisting with equipment selection, we are happy to advise you on how to effectively acquire new customers, conduct sales activities, and build a credible image for your company.



Figure 3.1: Sonniger S.A. – production plant

4. DESCRIPTION AND CLASSIFICATION OF PRODUCTS

The device features a high-performance fan with built-in three-stage speed control, which, combined with a double-row water heat exchanger, provides a wide and optimal range of parameters.

The electric air curtains, meanwhile, feature a new generation of intelligent PTC heaters.

Powerful performance – a range of up to 4 m, airflow up to 4800 m³/h, and power outputs from 14 to 40 kW.

The device's design was based on an analysis of the latest global trends in industrial equipment design.

GUARD air curtains are synonymous with modernity, the highest quality, and advanced technology.

The design itself features a unique combination of steel and the highest quality plastic.

GUARD models: 100C, 150C, 200C, 100E, 150E, 200E, 100W, 150W, 200W.

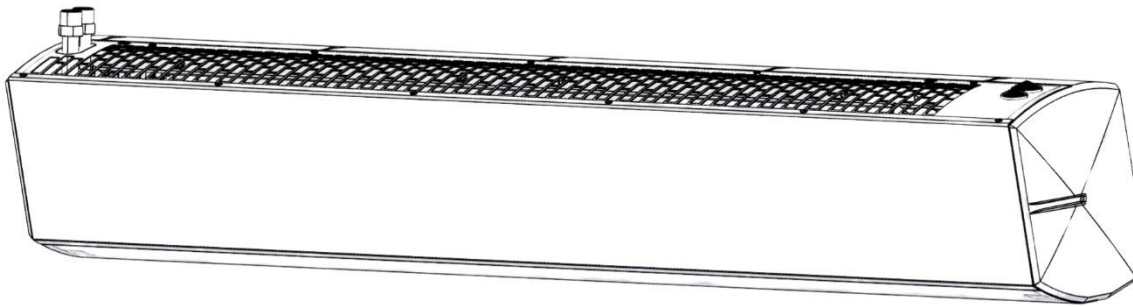


Figure 4.1: Guard air curtain

5. LIFE CYCLE ASSESSMENT (LCA) - RULES

5.1. DECLARED UNIT (DU)

The declaration refers to declared unit – 1 unit of Guard air curtains manufactured by Sonniger S.A.

5.2. ALLOCATION

The allocation rules used for this EPD are based on EN 15804+A2. The production of Guard Air Curtains takes place in one production plant in Zator, Poland.

Impacts from the global line production were inventoried and 2,5% were allocated to the production of Guard air curtains in terms of annual production volume expressed in pieces.

5.3. BIOGENIC CARBON CONTENT

The content of biogenic carbon in the product is determined quantitatively and results from the carbon dioxide removed from the atmosphere through the photosynthesis reaction. It is assumed that 50% of the dry mass of wood is carbon, 44% oxygen and hydrogen. Each kilogram of stored biogenic carbon is approximately 3.67 kg of CO₂ effectively removed from the atmosphere.

Tabela 5.1: Biogenic carbon content in packaging materials

Biogenic carbon content	Unit
CO ₂ equivalent	$44/12$
Biogenic carbon content in packaging materials	$\approx 0,472 \text{ kg C/unit}$

5.4. SYSTEM BOUNDARIES

The system limits for the environmental characteristics of Guard air curtains are shown in figure 5.1. Data used in LCA calculation were declared by manufacturer and reflected the actual status of the year 2024.

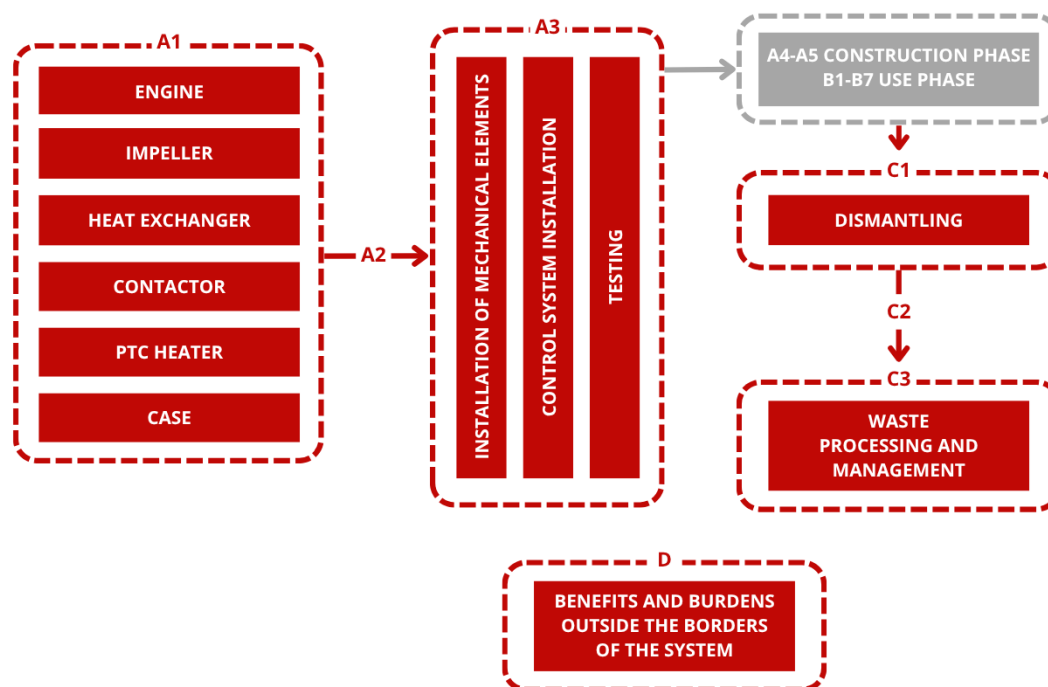


Figure 5.1: System boundaries for the environmental characteristics of Guard air curtains

This Environmental Product Declaration includes a life cycle assessment (LCA) for the Cradle-to-Gate, with modules C1-C4, D, according to EN 15804+A2. Modules A4-A5, B1-B7 are not declared.

5.4.1. A1 – RAW MATERIALS SUPPLY

This module takes into account the extraction and processing of all raw materials, as well as Energy consumption. The extraction and consumption of raw materials refers to specific mass shares in the production process per unit of declared product. Raw materials for the production of components of Guard Air Curtains come from Polish and foreign suppliers.

5.4.2. A2 – TRANSPORT TO THE PRODUCTION SITE

Raw materials are transported to the production plant from Polish and foreign suppliers. Distances from the place of obtaining raw materials to the production plant are individual for each raw material. The means of transport were diversified depending on the method of delivery of raw materials. The adopted model includes water and road transport (average values) for each raw material. For calculation purposes European fuel averages are applied in module A2.

5.4.3. A3 – PRODUCTION

Module A3 covers all production-related process – including the Guard air curtains components production, their packaging and internal transport.

A schematic of the production line for Guard air curtains is shown in Fig.5.2.

This module takes into account energy consumption and waste generated in the production plant, as well as losses generated in the production process.



Figure 5.2: Diagram of the production process of Guard air curtains

5.4.4. C1-C2 – DEMOLITION AND TRANSPORT

The end of life stage commence with demolition. Module C1 describes product disassembly, including on-site pre-sorting of waste. The calculations assume manual disassembly, without the use of fuel or mechanical energy.

C2 module is the beginning of waste treatment and describe waste transport. It was assumed that waste transport carried out to waste management plant and landfill (tab. 5.1.). For calculation purposes European fuel averages are applied.

5.4.5. C3-C4 – WASTE PROCESSING AND MANAGEMENT

For the purpose of life cycle analysis, scenarios were developed for modules C3 and C4. It is assumed that 98% of steel scrap, 75% of electronic scrap, and 100% of copper and aluminum are recycled. Additionally, 21% of plastic waste is sent for incineration with energy recovery. The remaining waste is sent to landfill as mixed construction and demolition waste (tab.5.1.).

Table 5.2: End of life scenario for Guard air curtains

Module	Assumption
C2	• 50 km – landfill • 50 km – waste management plant
C3	• 98% steel recycling • 75% electrical scrap recycling • 100% copper recycling • 100% aluminum recycling • 21% energy recovery from plastics
C4	• 2% - steel landfilling • 25% - electric scrap landfilling • 79% - plastic landfilling

5.4.6. D – BENEFITS AND LOADS BEYOND THE SYTEM BOUNDARY

Module D reflects the environmental benefits of reusing, recovering, or recycling materials at the end of their life cycle. The adapted scenario assumes 100% recovery of copper and aluminum. Additionally, 98% of steel scrap is recycled. Steel scrap is recycled into recyclate and then incorporated into the production of a new product. Meanwhile, 21% of plastic waste is sent to energy recovery.

DATA COLLECTION PERIOD	The data regarding the production of products refer to period from 01.01.2024 to 31.12.2024
DATA QUALITY	The values determined to calculate the LCA originate from verified Sonniger S.A. inventory data. The LCA analysis uses data prepared based on actual consumption at the production site. The details collected are no more than two years old.
CALCULATION RULES	The impacts of the representative Sonniger S.A. products were aggregated using weighted average. The weighted average method was used according to the percentage of each product in Guard air curtains based on the relations to whole production quantity. Impacts were calculated for all Guard air curtains and are shown in Tables 6.3-6.5. The LCA analysis was conducted in accordance with the EN 15804+A2.
CUT-OFF CRITERIA	All-important parameters from collected production data, i.e. all materials used by recipe, electricity consumed, internal fuel consumption and thermal energy, direct production waste, and the results of all available emission measurements were included in the calculations. In accordance with EN 15804, machinery and equipment (capital assets) needed for and during production, as well as the transportation of production facility employees, were not included. The sum of the omitted total mass flows does not exceed 1% and excluded consumption of renewable and non-renewable primary energy is no more than 1% according to EN 15804+A2.
BACKGROUND DATA	The main source of general and auxiliary data is the Ecoinvent 3.9 database.

6. LIFE CYCLE ASSESSMENT (LCA) - RESULTS

Life cycle assessment (LCA) of this environmental declaration covers A1-A3, C1-C4, D modules („cradle to gate” with C1-C4, D). Tabel 6.1. shows the LCA modules considered in calculating the environmental impact categories for the products covered by this declaration.

Table 6.1: Modules defined and not declared in system boundaries

Product stage			Construction process stage		Use stage							End of life stage				
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use stage	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse, recovery, recycling potential
X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X

X – modules defined

MND – modules not declared

Indicators describing environmental impact of product can be categorized as general environmental impacts, additional impacts and environmental aspects related to resources. The abbreviations and its explanations used to describe the environmental impact of Guard air curtains are shown below (tab. 6.2). The tables 6.3-6.5 present the results of the LCA analysis for Guard air curtains products.

Tabel 6.2: Abbreviations and its explanations used in LCA analysis

ENVIRONMENTAL IMPACT INDICATORS	
GWP-total	Global Warming Potential – total
GWP-fossil	Global Warming Potential - fossil
GWP-biogenic	Global Warming Potential - biogenic
GWP-luluc	Global Warming Potential - land use and land use change
ODP	Stratospheric ozone depletion potential
AP	Soil and water acidification potential
EP-freshwater	Eutrophication potential - freshwater
EP-marine	Eutrophication potential - seawater
EP-terrestrial	Eutrophication potential - terrestrial
POCP	Potential for photochemical ozone synthesis

ADP-minerals & metals*	Potential for depletion of abiotic resources - non-fossil resources
ADP-fossil*	Abiotic depletion potential – fossil fuels
WDP	Water deprivation potential

ENVIRONMENTAL ASPECTS RELATED TO RESOURCE INDICATORS

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
PEN-RE	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials
RE	Use of non-renewable primary energy resources used as raw materials
PENRT	Total use of non-renewable primary energy resources
SM	Use of secondary material
RSF	Use of renewable secondary fuels
NRSF	Use of non-renewable secondary fuels
FW	Use of net fresh water

ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES INDICATORS

HWD	Hazardous waste disposed
NHWD	Non-hazardous waste disposed
RWD	Radioactive waste disposed
CRU	Components for reuse
MFR	Materials for recycling
MER	Materials for energy recovery
EEE	Exported electrical energy
EET	Exported thermal energy

ADDITIONAL ENVIRONMENTAL IMPACTS INDICATORS

PM	Particulate matter
IRP**	Potential human exposure efficiency relative to U235
ETP-fw*	Potential comparative toxic unit for ecosystems
HTP-c*	Potential comparative toxic unit for humans (cancer effects)
HTP-nc*	Potential comparative toxic unit for humans (non-cancer effects)
SQP*	Potential soil quality index

*The results should be used with caution because there is high uncertainty or limited experience with this indicators.

**Apply mainly the possible impact of the nuclear fuel cycle on human health resulting from low ionizing radiation.

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Table 6.3: LCA analysis results for 1 unit of air curtain without heating element Guard C

Results for: 1 unit of air curtain without heating element Guard C										
ENVIRONMENTAL IMPACTS										
PARAMETER	UNIT	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
GWP-total	eq. kg CO2	6,54E+01	5,80E+00	3,32E+00	7,45E+01	0,00E+00	1,17E-01	3,96E+00	6,83E+00	-2,61E+01
GWP-fossil	eq. kg CO2	6,53E+01	5,79E+00	3,23E+00	7,44E+01	0,00E+00	1,17E-01	3,96E+00	8,97E-01	-2,64E+01
GWP-biogenic	eq. kg CO2	-2,17E-02	2,08E-03	4,06E-02	2,10E-02	0,00E+00	8,98E-05	-5,64E-03	5,93E+00	3,07E-01
GWP-luluc	eq. kg CO2	4,98E-02	3,88E-03	4,50E-02	9,86E-02	0,00E+00	5,72E-05	2,84E-03	2,29E-04	-1,49E-02
ODP	eq. kg CFC 11	9,71E-07	1,09E-07	7,71E-08	1,16E-06	0,00E+00	2,66E-09	1,38E-08	4,25E-09	-3,20E-07
AP	mol H+	5,95E-01	8,48E-02	1,44E-02	6,94E-01	0,00E+00	2,90E-04	1,08E-02	1,86E-03	-2,50E-01
EP-freshwater	eq. kg P	2,37E-01	3,56E-04	1,66E-03	2,39E-01	0,00E+00	8,65E-06	7,96E-04	1,44E-04	-2,17E-01
EP-marine	eq. kg N	1,40E-01	2,11E-02	9,21E-03	1,70E-01	0,00E+00	7,90E-05	5,85E-03	2,44E-02	-9,87E-02
EP-terrestrial	eq. mol N	1,81E+00	2,32E-01	3,83E-02	2,08E+00	0,00E+00	8,11E-04	2,57E-02	5,67E-03	-1,36E+00
POCP	eq. kg NMVOC	5,17E-01	6,82E-02	1,15E-02	5,97E-01	0,00E+00	4,74E-04	7,37E-03	3,76E-03	-2,94E-01
ADP-minerals & metals*	eq. kg Sb.	4,19E-03	1,68E-05	1,05E-05	4,22E-03	0,00E+00	3,36E-07	2,92E-05	6,70E-07	-1,69E-03
ADP-fossil*	MJ	1,05E+03	7,72E+01	4,67E+01	1,18E+03	0,00E+00	1,79E+00	2,01E+01	4,11E+00	-2,64E+02
WDP	eq. m3	2,80E+01	3,47E-01	2,06E+00	3,04E+01	0,00E+00	9,20E-03	4,47E-01	3,39E-02	-6,00E+00
ENVIRONMENTAL ASPECTS RELATED TO RESOURCES										
PERE	MJ	1,06E+02	1,20E+00	1,41E+01	1,22E+02	0,00E+00	2,60E-02	2,79E+00	1,61E-01	-4,98E+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	1,06E+02	1,20E+00	1,41E+01	1,22E+02	0,00E+00	2,60E-02	2,79E+00	1,61E-01	-4,98E+01
PEN-RE	MJ	9,91E+02	7,05E+01	4,43E+01	1,11E+03	0,00E+00	1,64E+00	1,96E+01	3,82E+00	-2,58E+02
PENRM	MJ	6,23E+01	6,76E+00	2,59E+00	7,17E+01	0,00E+00	1,55E-01	5,04E-01	2,99E-01	-5,61E+00
PENRT	MJ	1,05E+03	7,73E+01	4,68E+01	1,18E+03	0,00E+00	1,79E+00	2,01E+01	4,11E+00	-2,64E+02
SM	MJ	9,82E+00	8,93E-02	3,92E+00	1,38E+01	0,00E+00	1,79E-03	1,10E+01	4,98E-03	7,05E+00
RSF	MJ	9,66E-01	2,46E-02	6,72E-02	1,06E+00	0,00E+00	4,37E-04	2,85E-02	1,52E-03	4,67E-02
NRSF	MJ	3,58E+00	1,08E-01	1,13E-01	3,80E+00	0,00E+00	9,07E-04	6,24E-02	4,16E-03	1,24E+00
FW	m3	3,95E-01	8,09E-03	5,57E-02	4,59E-01	0,00E+00	2,39E-04	1,23E-02	3,75E-03	-1,82E-01

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GUARD AIR CURTAINS

ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

HWD	kg	1,45E+01	7,71E-02	1,01E-01	1,46E+01	0,00E+00	1,68E-03	1,06E-01	8,43E-03	-2,19E+00
NHWD	kg	6,33E+00	1,43E+00	6,39E+00	1,41E+01	0,00E+00	1,54E-01	1,48E+00	1,31E+01	-2,30E+00
RWD	kg	1,23E-03	2,54E-05	5,38E-05	1,31E-03	0,00E+00	5,42E-07	5,02E-05	3,06E-06	-5,58E-05
CRU	kg	-5,66E-21	-2,55E-21	0,00E+00	-8,21E-21	0,00E+00	-3,40E-23	0,00E+00	2,78E-24	-1,53E-20
MFR	kg	5,13E+00	8,24E-02	1,64E-01	5,37E+00	0,00E+00	1,54E-03	3,75E+00	3,79E-03	-1,45E+00
MER	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
EEE	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
EET	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

ADDITIONAL IMPACTS

PM	Disease incidence	6,28E-06	2,45E-07	1,84E-07	6,71E-06	0,00E+00	1,16E-08	4,21E-07	2,71E-08	-3,05E-06
IRP**	eq. kBq U235	4,89E+00	1,04E-01	2,13E-01	5,21E+00	0,00E+00	2,24E-03	2,04E-01	1,26E-02	-2,96E-01
ETP-fw*	CTUe	2,84E+03	3,95E+01	2,57E+01	2,91E+03	0,00E+00	8,55E-01	3,15E+01	2,39E+01	-2,48E+03
HTTP-c*	CTUh	3,15E-07	2,75E-09	2,28E-09	3,20E-07	0,00E+00	5,23E-11	3,41E-09	3,08E-10	8,31E-08
HTTP-nc*	CTUh	1,50E-06	4,06E-08	3,17E-08	1,58E-06	0,00E+00	1,28E-09	1,18E-07	1,37E-08	2,00E-06
SQP*	dimensionless	3,70E+02	2,09E+01	5,69E+01	4,48E+02	0,00E+00	1,80E+00	1,21E+01	7,64E+00	-1,93E+02

ENVIRONMENTAL PRODUCT DECLARATION

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Table 6.4: LCA analysis results for 1 unit of air curtain equipped with a water heat exchanger Guard W

Results per: 1 unit of air curtain equipped with a water heat exchanger Guard W										
ENVIRONMENTAL IMPACTS										
PARAMETER	UNIT	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
GWP-total	eq. kg CO2	9,45E+01	4,70E+00	3,32E+00	1,03E+02	0,00E+00	1,27E-01	9,37E+00	7,60E+00	-4,83E+01
GWP-fossil	eq. kg CO2	9,49E+01	4,69E+00	3,23E+00	1,03E+02	0,00E+00	1,27E-01	9,33E+00	9,52E-01	-4,90E+01
GWP-biogenic	eq. kg CO2	-4,28E-01	2,33E-03	4,06E-02	-3,85E-01	0,00E+00	9,75E-05	3,44E-02	6,65E+00	7,70E-01
GWP-luluc	eq. kg CO2	8,51E-02	3,03E-03	4,50E-02	1,33E-01	0,00E+00	6,20E-05	1,08E-02	2,51E-04	-4,05E-02
ODP	eq. kg CFC 11	1,27E-06	9,20E-08	7,71E-08	1,44E-06	0,00E+00	2,89E-09	8,78E-08	4,62E-09	-5,29E-07
AP	mol H+	1,22E+00	5,20E-02	1,44E-02	1,29E+00	0,00E+00	3,15E-04	3,36E-01	2,04E-03	-5,43E-01
EP-freshwater	eq. kg P	6,33E-01	3,19E-04	1,66E-03	6,35E-01	0,00E+00	9,39E-06	1,66E-02	1,60E-04	-5,96E-01
EP-marine	eq. kg N	3,10E-01	1,29E-02	9,21E-03	3,33E-01	0,00E+00	8,58E-05	2,11E-02	2,62E-02	-2,53E-01
EP-terrestrial	eq. mol N	4,24E+00	1,41E-01	3,83E-02	4,42E+00	0,00E+00	8,81E-04	2,23E-01	6,17E-03	-3,59E+00
POCP	eq. kg NMVOC	1,01E+00	4,37E-02	1,15E-02	1,06E+00	0,00E+00	5,14E-04	6,94E-02	4,14E-03	-7,18E-01
ADP-minerals & metals*	eq. kg Sb.	1,14E-02	1,57E-05	1,05E-05	1,14E-02	0,00E+00	3,64E-07	4,17E-03	7,36E-07	-4,77E-03
ADP-fossil*	MJ	1,38E+03	6,37E+01	4,67E+01	1,49E+03	0,00E+00	1,94E+00	9,60E+01	4,47E+00	-5,00E+02
WDP	eq. m3	3,89E+01	3,08E-01	2,06E+00	4,12E+01	0,00E+00	9,99E-03	3,90E+00	3,71E-02	-1,30E+01
ENVIRONMENTAL ASPECTS RELATED TO RESOURCES										
PERE	MJ	2,13E+02	1,10E+00	1,41E+01	2,28E+02	0,00E+00	2,82E-02	2,02E+01	1,78E-01	-1,38E+02
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	2,13E+02	1,10E+00	1,41E+01	2,28E+02	0,00E+00	2,82E-02	2,02E+01	1,78E-01	-1,38E+02
PEN-RE	MJ	1,31E+03	5,81E+01	4,43E+01	1,41E+03	0,00E+00	1,78E+00	9,30E+01	4,15E+00	-4,86E+02
PENRM	MJ	7,27E+01	5,53E+00	2,59E+00	8,08E+01	0,00E+00	1,69E-01	2,96E+00	3,23E-01	-1,35E+01
PENRT	MJ	1,38E+03	6,37E+01	4,68E+01	1,49E+03	0,00E+00	1,94E+00	9,60E+01	4,47E+00	-5,00E+02
SM	MJ	1,10E+01	8,06E-02	3,92E+00	1,50E+01	0,00E+00	1,95E-03	4,00E+01	5,45E-03	1,11E+01
RSF	MJ	1,18E+00	2,38E-02	6,72E-02	1,27E+00	0,00E+00	4,75E-04	2,94E-01	1,67E-03	1,12E-01
NRSF	MJ	4,17E+00	1,05E-01	1,13E-01	4,39E+00	0,00E+00	9,84E-04	3,46E+00	4,59E-03	4,09E+00
FW	m3	6,53E-01	7,34E-03	5,57E-02	7,16E-01	0,00E+00	2,59E-04	1,44E-01	4,07E-03	-3,02E-01

ENVIRONMENTAL PRODUCT DECLARATION
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ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

HWD	kg	2,00E+01	6,34E-02	1,01E-01	2,01E+01	0,00E+00	1,82E-03	1,16E+00	9,26E-03	-6,36E+00
NHWD	kg	1,08E+01	1,41E+00	6,39E+00	1,86E+01	0,00E+00	1,67E-01	2,34E+00	1,41E+01	-5,98E+00
RWD	kg	1,72E-03	2,40E-05	5,38E-05	1,80E-03	0,00E+00	5,88E-07	3,24E-04	3,38E-06	-2,34E-04
CRU	kg	-5,66E-21	-2,55E-21	0,00E+00	-8,21E-21	0,00E+00	-3,69E-23	0,00E+00	2,83E-24	-1,53E-20
MFR	kg	5,75E+00	7,39E-02	1,64E-01	5,99E+00	0,00E+00	1,68E-03	4,39E+00	4,16E-03	-1,37E+00
MER	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
EEE	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
EET	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

ADDITIONAL IMPACTS

PM	Disease incidence	1,15E-05	2,13E-07	1,84E-07	1,19E-05	0,00E+00	1,26E-08	1,19E-06	2,94E-08	-7,51E-06
IRP**	eq. kBq U235	6,89E+00	9,78E-02	2,13E-01	7,20E+00	0,00E+00	2,43E-03	1,25E+00	1,39E-02	-1,09E+00
ETP-fw*	CTUe	7,61E+03	3,28E+01	2,57E+01	7,67E+03	0,00E+00	9,28E-01	2,82E+02	2,66E+01	-7,00E+03
HTTP-c*	CTUh	3,74E-07	2,27E-09	2,28E-09	3,79E-07	0,00E+00	5,68E-11	6,19E-08	3,41E-10	8,64E-08
HTTP-nc*	CTUh	2,74E-06	3,66E-08	3,17E-08	2,81E-06	0,00E+00	1,39E-09	5,24E-06	1,52E-08	5,90E-06
SQP*	dimensionless	8,02E+02	1,99E+01	5,69E+01	8,79E+02	0,00E+00	1,96E+00	1,39E+02	8,25E+00	-5,06E+02

ENVIRONMENTAL PRODUCT DECLARATION

GUARD AIR CURTAINS

Table 6.5: LCA analysis results for 1 unit of air curtain equipped with a electric heater Guard E

Results per: 1 unit of air curtain equipped with a electric heater Guard E										
ENVIRONMENTAL IMPACTS										
PARAMETER	UNIT	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
GWP-total	eq. kg CO2	9,59E+01	7,22E+00	3,32E+00	1,06E+02	0,00E+00	1,22E-01	4,69E+00	7,76E+00	-4,53E+01
GWP-fossil	eq. kg CO2	9,59E+01	7,21E+00	3,23E+00	1,06E+02	0,00E+00	1,21E-01	4,70E+00	1,02E+00	-4,57E+01
GWP-biogenic	eq. kg CO2	-6,13E-02	3,29E-03	4,06E-02	-1,74E-02	0,00E+00	9,31E-05	-1,12E-02	6,74E+00	3,93E-01
GWP-luluc	eq. kg CO2	6,54E-02	4,81E-03	4,50E-02	1,15E-01	0,00E+00	5,92E-05	2,52E-03	2,60E-04	-1,94E-02
ODP	eq. kg CFC 11	1,23E-06	1,35E-07	7,71E-08	1,45E-06	0,00E+00	2,76E-09	2,95E-08	4,82E-09	-4,71E-07
AP	mol H+	1,19E+00	9,23E-02	1,44E-02	1,29E+00	0,00E+00	3,01E-04	2,84E-02	2,11E-03	-4,43E-01
EP-freshwater	eq. kg P	2,94E-01	4,97E-04	1,66E-03	2,96E-01	0,00E+00	8,96E-06	1,51E-03	1,63E-04	-2,44E-01
EP-marine	eq. kg N	1,94E-01	2,38E-02	9,21E-03	2,27E-01	0,00E+00	8,19E-05	7,74E-03	2,76E-02	-1,29E-01
EP-terrestrial	eq. mol N	2,45E+00	2,61E-01	3,83E-02	2,75E+00	0,00E+00	8,41E-04	4,47E-02	6,43E-03	-1,70E+00
POCP	eq. kg NMVOC	7,01E-01	7,83E-02	1,15E-02	7,91E-01	0,00E+00	4,91E-04	1,34E-02	4,27E-03	-3,85E-01
ADP-minerals & metals*	eq. kg Sb.	8,97E-03	2,19E-05	1,05E-05	9,01E-03	0,00E+00	3,48E-07	2,51E-04	7,60E-07	-1,84E-03
ADP-fossil*	MJ	1,43E+03	9,64E+01	4,67E+01	1,57E+03	0,00E+00	1,86E+00	2,26E+01	4,66E+00	-4,58E+02
WDP	eq. m3	3,66E+01	4,72E-01	2,06E+00	3,92E+01	0,00E+00	9,54E-03	5,88E-01	3,84E-02	-8,18E+00
ENVIRONMENTAL ASPECTS RELATED TO RESOURCES										
PERE	MJ	1,32E+02	1,65E+00	1,41E+01	1,48E+02	0,00E+00	2,70E-02	3,53E+00	1,83E-01	-5,70E+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	1,32E+02	1,65E+00	1,41E+01	1,48E+02	0,00E+00	2,70E-02	3,53E+00	1,83E-01	-5,70E+01
PEN-RE	MJ	1,35E+03	8,81E+01	4,43E+01	1,48E+03	0,00E+00	1,70E+00	2,16E+01	4,33E+00	-4,50E+02
PENRM	MJ	7,70E+01	8,34E+00	2,59E+00	8,79E+01	0,00E+00	1,61E-01	9,95E-01	3,38E-01	-8,74E+00
PENRT	MJ	1,43E+03	9,64E+01	4,68E+01	1,57E+03	0,00E+00	1,86E+00	2,26E+01	4,66E+00	-4,58E+02
SM	MJ	1,04E+01	1,22E-01	3,92E+00	1,44E+01	0,00E+00	1,86E-03	3,58E+01	5,65E-03	8,05E+00
RSF	MJ	1,09E+00	3,23E-02	6,72E-02	1,19E+00	0,00E+00	4,53E-04	4,66E-02	1,72E-03	4,02E-02
NRSF	MJ	3,91E+00	1,48E-01	1,13E-01	4,17E+00	0,00E+00	9,40E-04	2,32E-01	4,72E-03	1,32E+00
FW	m3	6,23E-01	1,09E-02	5,57E-02	6,90E-01	0,00E+00	2,48E-04	3,01E-02	4,25E-03	-2,24E-01

ENVIRONMENTAL PRODUCT DECLARATION
GUARD AIR CURTAINS

ENVIRONMENTAL INFORMATION DESCRIBING WASTE CATEGORIES

HWD	kg	1,93E+01	1,09E-01	1,01E-01	1,95E+01	0,00E+00	1,74E-03	2,52E-01	9,57E-03	-5,21E+00
NHWD	kg	7,67E+00	1,87E+00	6,39E+00	1,59E+01	0,00E+00	1,60E-01	1,96E+00	1,48E+01	-2,81E+00
RWD	kg	1,69E-03	3,42E-05	5,38E-05	1,78E-03	0,00E+00	5,62E-07	5,38E-05	3,48E-06	-2,98E-04
CRU	kg	-5,66E-21	-3,25E-21	0,00E+00	-8,91E-21	0,00E+00	-3,53E-23	0,00E+00	2,79E-24	-1,53E-20
MFR	kg	5,57E+00	1,09E-01	1,64E-01	5,84E+00	0,00E+00	1,60E-03	3,85E+00	4,30E-03	-1,48E+00
MER	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
EEE	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
EET	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

ADDITIONAL IMPACTS

PM	Disease incidence	8,63E-06	3,52E-07	1,84E-07	9,16E-06	0,00E+00	1,20E-08	5,21E-07	3,07E-08	-4,25E-06
IRP**	eq. kBq U235	6,76E+00	1,40E-01	2,13E-01	7,11E+00	0,00E+00	2,32E-03	2,12E-01	1,43E-02	-1,31E+00
ETP-fw*	CTUe	3,53E+03	4,98E+01	2,57E+01	3,60E+03	0,00E+00	8,86E-01	6,37E+01	2,72E+01	-2,74E+03
HTTP-c*	CTUh	3,93E-07	3,67E-09	2,28E-09	3,99E-07	0,00E+00	5,42E-11	6,66E-09	3,49E-10	6,40E-08
HTTP-nc*	CTUh	6,51E-06	5,29E-08	3,17E-08	6,59E-06	0,00E+00	1,33E-09	3,66E-07	1,56E-08	1,85E-06
SQP*	dimensionless	5,37E+02	2,99E+01	5,69E+01	6,24E+02	0,00E+00	1,87E+00	3,02E+01	8,65E+00	-2,36E+02

7. REFERENCES

- EN 15804+A2:2019 Sustainability of construction works -- Environmental product declarations -- Core rules for the product category of construction products
- ISO 14025:2006 Environmental labels and declarations -- Type III environmental declarations -- Principles and procedures
- ISO 14044:2006 Environmental management -- Life cycle assessment -- Requirements and guidelines
- EN 15942:2021 Sustainability of construction works -- Environmental product declarations -- Communication format business-to-business
- ISO 14067:2018 Greenhouse gases -- Carbon footprint of products -- Requirements and guidelines for quantification
- ISO 21930:2017 Sustainability in buildings and civil engineering works -- Core rules for environmental product declarations of construction products and services
- Ecoinvent 3.9 database



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CERTIFICATE No. EPD-2025-0081-2 **of TYPE III ENVIRONMENTAL DECLARATION**

Product:

Guard air curtains

- without a heating element Guard C
- equipped with a water heat exchanger Guard W
- equipped with an electric heater Guard E

Manufacturer:

SONNIGER S.A.
ul. Podolska 21
81-321 Gdynia
NIP: 586-227-35-14

confirms the correctness of the data included in the development of the Type III Environmental Declaration and accordance with the requirements of the standard:

EN 15804+A2:2019

Sustainability of construction works --
Environmental product declarations --
Core rules for the product category of construction products

This certificate, issued for the first time on 16/07/2025 and is valid for 5 years or until amendment of mentioned Environmental Declaration .



Director of the Certification
Department
CERTBUD Sp. z o.o.

K. Pawłowski

Kamil PAWŁOWSKI

Warsaw, 16/07/2025 r.