WIŚNIOWSKI

ENVIRONMENTAL DECLARATION

for Type III Product No. 359/2022

Issuance date: 14.07.2023
Validity date: 14.07.2028

FENCES

RESIDENTIAL AND INDUSTRIAL

EPD Owner

WIŚNIOWSKI Sp. z o.o. S.K.A.
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ITB jest zweryfikowanym członkiem Europejskiej Platformy dla operatorów programu EPD i podmiotem stosującym LCA www.eco-platform.org

Basic Information

This declaration is the Type III Environmental Product Declaration (EPD) based on EN 15804+A2 and verified according to ISO 14025 by an external auditor. It contains the information on the impacts of the declared construction materials on the environment and their aspects verified by the independent body according to ISO 14025. Basically, comparison or evaluation of EPD data is possible only if all the compared data were created according to EN 15804+A2.

Life cycle analysis (LCA)

A1-A3, C1-C4 and D modules in accordance with EN 15804+A2 (Cradle-to-Gate with options)

The year of preparing the EPD

2022

Product standard

EN 13241, EN ISO 1050

Service Life

100 years

PCR

ITB-PCR A

Declared unit

1 kg of the fencing system

Reasons for performing LCA

B2B

Representativeness:

Polish, European

MANUFACTURER

WIŚNIOWSKI is Polish producer of sectional garage doors, steel and aluminium doors and windows (including external and industrial doors) as well as residential and industrial fences, established in 1989. The company encompasses three plants located in Wielogłowy, operating in the areas of garage doors, fences, and joinery. WIŚNIOWSKI possess nearly 2,500 points of sale all over Europe, 27,000 square metres of production area, and employs as many as 2,000 people.

Fig. 1. WIŚNIOWSKI Sp. z o.o. S.K.A. manufacturing plant located in Wielogłowy (Poland).

PRODUCTS DESCRIPTION AND APPLICATION

Residential and industrial fencing systems are steel products with corrosion protection, produced in accordance with EN 13241 and EN ISO 1050 standards. The fencing system are available in 16 refined colours with a 3D structure and can be equipped with overload switches, photocells, signalling lamps, automatic closers and covers. Gate are power supplied with 24 V or 230 V.

Residential and industrial fencing systems can be installed on the residential plot as well as plot of land with production facilities, warehouse space or logistics centres.

THE SPECIFICATION OF RESIDENTIAL FENCES

The specification of residential fences offered by WIŚNIOWSKI Sp. z o.o. S.K.A. is presented in Table 1.

Product line / system names	Design	Number of models	System infills	Corrosion protection
HOME INCLUSIVE		4	box sections and solid sheets	hot-dip galvanized + RAL Standard
MODERN		15	closed box sections perforated and solid sheets	hot-dip galvanized, or hot-dip galvanized + RAL Standard
LUX		18	steel rods with a cross section of 14 x 14 [mm]	
PREMIUM		7	steel rods with a cross section of 20 x 20 [mm]	
STYLE		13	steel rods with a cross section of 12 x 12 [mm]	
VARIO		4	closed steel box sections terminated with PVC finial tips	
CLASSIC		13	closed steel box sections terminated with caps in the top line of the infill	
BASIC		13		

Table 1. The specification of residential fences systems produced by WIŚNIOWSKI Sp. z o.o. S.K.A.

THE SPECIFICATION OF INDUSTRIAL FENCES

The specification of industrial fences offered by WIŚNIOWSKI Sp. z o.o. S.K.A. is presented in Table 2.

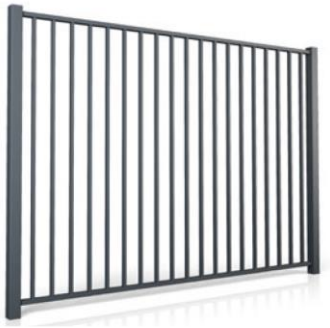
Product line	Design	Series
CANTILEVER SLIDING GATES		PI series GARDIA sliding gate MODEST sliding gate
SLIDING GATES ON WHEELS		WI series
DOUBLE LEAF GATES AND WICKETS		BASTION system GARDIA system GARDIA Light system MODEST system GARDEN system
INDUSTRIAL FOLDING GATES		V-KING folding gate TRAFFIC folding gate
PORTABLE SOLUTIONS		TRAFFIC V-KING PI 95
VEGA PANEL FENCES		2D mesh panels 3D mesh panels Sports fencing
INDUSTRIAL SEGMENTS		OPO 201 OPO 251 OPO 252 OPO 253 OPR 25 OPC 25 OP 318

Table 2. The specification of industrial fences systems produced by WIŚNIOWSKI Sp. z o.o. S.K.A.

LIFE CYCLE ASSESSMENT (LCA) – GENERALLY APPLIED RULES

Allocation

The allocation rules used for this EPD are based on general ITB PCR A. Production of the residential and industrial fencing systems a line process conducted in the manufacturing plant located in Wielogłowy (Poland). All impacts from raw materials extraction and processing are allocated in module A1 of the LCA. Impacts from the line production of WIŚNIOWSKI Sp. z o.o. S.K.A. were inventoried and 38.07% was allocated to production of the residential and industrial fencing systems based on the products mass basis. Water and energy consumption, associated emissions and generated wastes are allocated to module A3. Packaging materials were taken into consideration.

System limits

The life cycle analysis (LCA) of the declared products covers: product stage – modules A1-A3, end of life – modules C1-C4 and benefits and loads beyond the system boundary – module D (cradle-to-gate with options) in accordance with EN 15804+A2 and ITB PCR A. Energy and water consumption, emissions as well as information on generated wastes were inventoried and were included in the calculations. It can be assumed that the total sum of omitted processes does not exceed 5% of all impact categories. In accordance with EN 15804+A2, machines and facilities (capital goods) required for the production as well as transportation of employees were not included in LCA.

Modules A1 and A2: Raw material supply and transport

Steel semi-finished products, accessories, paints, packaging materials and ancillary materials come from both local and foreign suppliers. The means of transport include lorries with loading capacity < 10 t, 10 – 16 t and > 16 t. Impacts associated with the transport were calculated for the total transport in 2020 and recalculated for the production of 1 ton of a product by WIŚNIOWSKI Sp. z o.o. S.K.A. European standards for average combustion were used for calculations.

Module A3: Manufacturing

The production process of the residential and industrial fencing systems by WIŚNIOWSKI Sp. z o.o. S.K.A. is presented in Figure 2.

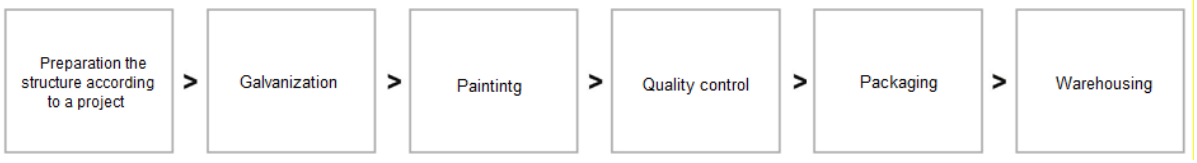


Fig. 2 A scheme of the residential and industrial fencing systems production process by WIŚNIOWSKI Sp. z o.o. S.K.A.

Modules C1-C4 and D: End-of-life (EoL)

There are no specific deconstruction methods of the steel residential and industrial fencing systems applied in Poland. In the adapted scenario, deconstruction of the residential and industrial fencing systems is performed with the use of electrical tools (module C1). It is assumed that at the EoL cycle 100% of the steel residential and industrial fencing systems are recovered. The resulting waste is transported to a waste processing plant distant about 60 km, on 16–32 t lorry EURO 5 (module C2) where is sorted, crushed and forwarded to recycling while the residues undergo landfilling in the form of inert mixed construction and demolition wastes (module C4). Module D presents credits resulting from the recycling of the primary steel scrap.

Material	Material recovery	Recycling	Landfilling
steel	100%	98%	2%

Table 3. End-of-life (EoL) scenario for the residential and industrial fencing systems offered by WIŚNIOWSKI Sp. z o.o. S.K.A.

Data quality

The data selected for LCA originate from ITB-LCI questionnaires completed by WIŚNIOWSKI Sp. z o.o. S.K.A. using the inventory data, ITB and Ecoinvent v. 3.9 databases and KOBiZE. KOBiZE data is supplemented with Ecoinvent v. 3.9 data on the national electricity mix impact where no specific indicator data is provided. No specific data collected is older than five years and no generic datasets used are older than ten years. The representativeness, completeness, reliability, and consistency are judged as good. Polish electricity was calculated based on Ecoinvent v 3.9 supplemented by actual national KOBiZE data.

Data collection period

Primary data provided by WIŚNIOWSKI Sp. z o.o. S.K.A. covers a period of 01.01.2020–31.12.2020 (1 year). The life cycle assessments were prepared for Poland and Europe as reference area.

Assumptions and estimates

The impacts of the representative of the residential and industrial fencing systems were aggregated using weighted average. Impacts were inventoried and calculated for all residential and industrial fencing systems manufactured by WIŚNIOWSKI Sp. z o.o. S.K.A.

Calculation rules

LCA was performed using ITB-LCA tool developed in accordance with EN15804+A2.

Databases

The data for the processes comes from specific EPDs, Ecoinvent v.3.9 and ITB-Database. Specific data quality analysis was a part of external audit.

LIFE CYCLE ASSESSMENT (LCA) – Results

Declared unit

The declaration refers to declared unit (DU) – 1 kg of the residential and industrial fencing systems, manufactured by WIŚNIOWSKI Sp. z o.o. S.K.A.

Table 4. System boundaries for the environmental characteristic of the residential and industrial fencing systems, manufactured by WIŚNIOWSKI Sp. z o.o. S.K.A.

Environmental assessment information (MD – Module Declared, MND – Module Not Declared, INA – Indicator Not Assessed)																
Product stage			Construction process		Use stage							End of life				Benefits and loads beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport to construction site	Construction-installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction 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**
MD	**MD**	**MD**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MD**	**MD**	**MD**	**MD**	**MD**

Table 5. LCA results of the residential and industrial fencing system manufactured by WIŚNIOWSKI Sp. z o.o. S.K.A.–- environmental impacts (DU: 1 kg)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Global Warming Potential	eq. kg CO2	2.07E+00	8.41E-02	1.08E+00	3.23E+00	1.27E-02	4.17E-01	2.46E-02	1.06E-04	-1.37E+00
Greenhouse gas potential – fossil	eq. kg CO2	2.05E+00	8.38E-02	1.06E+00	3.19E+00	1.25E-02	4.16E-01	2.45E-02	1.05E-04	-1.37E+00
Greenhouse gas potential – biogenic	eq. kg CO2	1.72E-02	3.05E-04	1.65E-02	3.40E-02	2.25E-04	1.42E-03	2.11E-05	2.68E-07	-5.60E-03
Global warming potential – land use and land use change	eq. kg CO2	1.69E-03	3.53E-05	2.18E-04	1.94E-03	2.93E-06	1.63E-04	2.43E-06	9.94E-08	-7.89E-04
Stratospheric ozone depletion potential	eq. kg CFC 11	7.42E-08	1.92E-08	3.87E-08	1.32E-07	2.19E-10	9.62E-08	5.20E-09	4.26E-11	-5.44E-08
Soil and water acidification potential	eq. mol H+	9.46E-03	3.42E-04	8.94E-03	1.87E-02	1.21E-04	1.69E-03	1.22E-04	9.90E-07	-5.94E-03
Eutrophication potential – freshwater	eq. kg P	1.09E-03	5.98E-06	1.48E-03	2.58E-03	2.07E-05	2.79E-05	7.54E-07	9.81E-09	-7.14E-04
Eutrophication potential – seawater	eq. kg N	2.08E-03	1.02E-04	1.31E-03	3.49E-03	1.72E-05	5.09E-04	4.76E-05	3.45E-07	-1.28E-03
Eutrophication potential – terrestrial	eq. mol N	2.16E-02	1.11E-03	1.10E-02	3.36E-02	1.48E-04	5.55E-03	5.22E-04	3.77E-06	-1.35E-02
Potential for photochemical ozone synthesis	eq. kg NMVOC	1.25E-02	3.40E-04	3.15E-03	1.60E-02	4.14E-05	1.70E-03	1.47E-04	1.10E-06	-5.81E-03
Potential for depletion of abiotic resources – non-fossil resources	eq. kg Sb	6.85E-05	3.29E-07	1.31E-06	7.02E-05	1.65E-08	1.47E-06	1.27E-08	2.42E-10	-1.85E-05
Abiotic depletion potential – fossil fuels	MJ	2.55E+01	1.24E+00	1.59E+01	4.27E+01	1.86E-01	6.17E+00	3.27E-01	2.89E-03	-1.50E+01
Water deprivation potential	eq. m^3	1.05E+00	6.00E-03	2.83E-01	1.34E+00	3.79E-03	2.85E-02	8.78E-04	9.16E-06	-4.57E-01

WIŚNIOWSKI Sp. z o.o. S.K.A. 33-311 Wielogłowy 153 NIP (VAT no.): 734-35-13-091 KRS: 0000431405 TEL. +48 18 44 77 111 www.wisniowski.pl

Table 6. LCA results of the residential and industrial fencing system manufactured by WIŚNIOWSKI Sp. z o.o. S.K.A. – additional impact indicators (DU: 1 kg)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Particulate matter	Disease incidence	INA	INA	INA	INA	INA	INA	INA	INA	INA
Potential human exposure efficiency relative to U235	eg. kBq U235	INA	INA	INA	INA	INA	INA	INA	INA	INA
Potential comparative toxic unit for ecosystems	CTUe	INA	INA	INA	INA	INA	INA	INA	INA	INA
Potential comparative toxic unit for humans (cancer effects)	CTUh	INA	INA	INA	INA	INA	INA	INA	INA	INA
Potential comparative toxic unit for humans (non-cancer effects)	CTUh	INA	INA	INA	INA	INA	INA	INA	INA	INA
Potential soil quality index	dimensionless	INA	INA	INA	INA	INA	INA	INA	INA	INA

Table 7. LCA results of the residential and industrial fencing system manufactured by WIŚNIOWSKI Sp. z o.o. S.K.A. – resource use (DU: 1 kg)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Consumption of renewable primary energy – excluding renewable primary energy sources used as raw materials	MJ	2.46E+00	1.90E-02	9.66E-01	3.45E+00	1.35E-02	8.85E-02	1.88E-03	2.51E-05	-1.67E+00
Consumption of renewable primary energy resources used as raw materials	MJ	5.64E-01	0.00E+00	0.00E+00	5.64E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total consumption of renewable primary energy resources	MJ	3.02E+00	1.90E-02	9.66E-01	4.01E+00	1.35E-02	8.85E-02	1.88E-03	2.51E-05	-1.67E+00
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	2.56E+01	1.24E+00	1.70E+01	4.38E+01	1.97E-01	6.17E+00	3.54E-01	2.89E-03	-1.52E+01
Consumption of non-renewable primary energy resources used as raw materials	MJ	8.90E-02	0.00E+00	0.00E+00	8.90E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total consumption of non-renewable primary energy resources	MJ	2.57E+01	1.24E+00	1.70E+01	4.39E+01	1.97E-01	6.17E+00	3.54E-01	2.89E-03	-1.52E+01
Consumption of secondary materials	kg	6.44E-01	4.48E-04	1.31E-03	6.46E-01	1.50E-05	2.07E-03	1.28E-04	6.07E-07	-5.97E-01
Consumption of renewable secondary fuels	MJ	4.20E-03	5.02E-06	6.48E-06	4.22E-03	8.23E-08	2.28E-05	4.19E-07	1.59E-08	-1.80E-04
Consumption of non-renewable secondary fuels	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
Net consumption of freshwater resources	m^3	2.40E-02	1.63E-04	2.47E-03	2.66E-02	6.06E-05	7.76E-04	5.88E-06	3.16E-06	-1.13E-02

Table 8. LCA results of the residential and industrial fencing system manufactured by WIŚNIOWSKI Sp. z o.o. S.K.A. – waste categories (DU: 1 kg)

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Hazardous waste neutralized	kg	6.06E-02	1.47E-03	4.75E-02	1.10E-01	3.86E-08	6.92E-03	9.14E-07	3.07E-06	-9.32E-05
Non-hazardous waste neutralised	kg	2.13E+00	2.63E-02	1.07E-01	2.27E+00	1.10E-03	1.23E-01	4.46E-04	4.32E-05	-6.80E-01
Radioactive waste	kg	7.02E-05	8.50E-06	1.45E-05	9.32E-05	1.60E-07	4.25E-05	2.31E-06	1.92E-08	-4.15E-05
Components for re-use	kg	0.00E+00	0.00E+00	4.41E-02	4.41E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	3.30E-03	4.17E-06	5.48E-02	5.81E-02	1.13E-06	1.91E-05	4.36E-07	5.78E-09	-1.04E-04
Materials for energy recovery	kg	7.20E-06	3.21E-08	1.37E-07	7.37E-06	1.58E-09	1.54E-07	6.98E-09	6.85E-11	-5.36E-06
Energy exported	MJ	1.16E-01	1.42E-03	4.00E-02	1.58E-01	5.41E-04	6.84E-03	1.43E-03	0.00E+00	-3.38E-02

Verification

The process of verification of this EPD is in accordance with ISO 14025 and ISO 21930. After verification, this EPD is valid for a 5-year-period. EPD does not have to be recalculated after 5 years, if the underlying data have not changed significantly.

The basis for LCA analysis was EN 15804+A2 and ITB PCR A
Independent verification corresponding to ISO 14025 (subclause 8.1.3.) ☒ External ☐ Internal
External verification of EPD: Halina Prejzner, PhD Eng LCA, LCI audit and input data verification: Mateusz Kozicki, PhD LCA verification: Michał Piasecki, PhD, DSc, Eng Signature Not Verified Dokument podpisany przez Mateusz Kozicki ITB Data: 2023.07.14 09:51:21 CEST

Note 1: The declaration owner has the sole ownership, liability and responsibility for the for the information provided and contained in EPD. Declarations within the same product category but from different programmes may not be comparable. Declarations of construction products may not be comparable if they do not comply with EN 15804 + A2. For further information about comparability, see EN 15804 + A2 and ISO 14025. Depending on the application, a corresponding conversion factor such as the specific weight per surface area must be taken into consideration.

Note 2: ITB is a public Research Organization and Notified Body (EC Reg. no 1488) to the European Commission and to other Member States of the European Union designated for the tasks concerning the assessment of building products' performance. ITB acts as the independent, third-party verification organization (17065/17025 certified). ITB-EPD program is recognized and registered member of The European Platform – Association of EPD program operators and ITB-EPD declarations are registered and stored in the international ECO-PORTAL.

Normative references

• ITB PCR A General Product Category Rules for Construction Products

• ISO 14025:2006, Environmental labels and declarations – Type III environmental declarations – Principles and procedures

• ISO 21930:2017 Sustainability in buildings and civil engineering works- Core rules for environmental product declarations of construction products and services

• ISO 14044:2006 Environmental management – Life cycle assessment – Requirements and guidelines

• ISO 15686-1:2011 Buildings and constructed assets – Service life planning – Part 1: General principles and framework

• ISO 15686-8:2008 Buildings and constructed assets – Service life planning – Part 8: Reference service life and service-life estimation

• EN 15804:2012+A2:2019 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products

• PN-EN 15942:2012 Sustainability of construction works – Environmental product declarations – Communication format business-to-business

• KOBiZE Emissions (CO2, SO2, NOx, CO and total dust) from electricity. December 2021

Instytut Techniki Budowlanej

Elektronicznie podpisany przez Agnieszka Winkler-Skalna; ITB
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Thermal Physics, Acoustics and Environment Department

02-656 Warsaw, Ksawerów 21

CERTIFICATE № 359/2022
of TYPE III ENVIRONMENTAL DECLARATION

Products:

Residential and industrial fences

Manufacturer:

WIŚNIOWSKI Sp. z o.o. S.K.A.

Wielogłowy 153, 33-311, Poland

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

EN 15804+A2

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

This certificate, issued on 14th July 2023 is valid for 5 years
or until amendment of mentioned Environmental Declaration

Head of the Thermal Physic, Acoustics and Environment Department

Agnieszka Winkler-Skalna, PhD

INSTYTUT TECHNIKI BUDOWLANEJ

Deputy Director for Research and Innovation

Krzysztof Kuczyński, PhD

Warsaw, July 2023