Type III Environmental Product Declaration No. 616/2024

Issuance date: 28.03.2024
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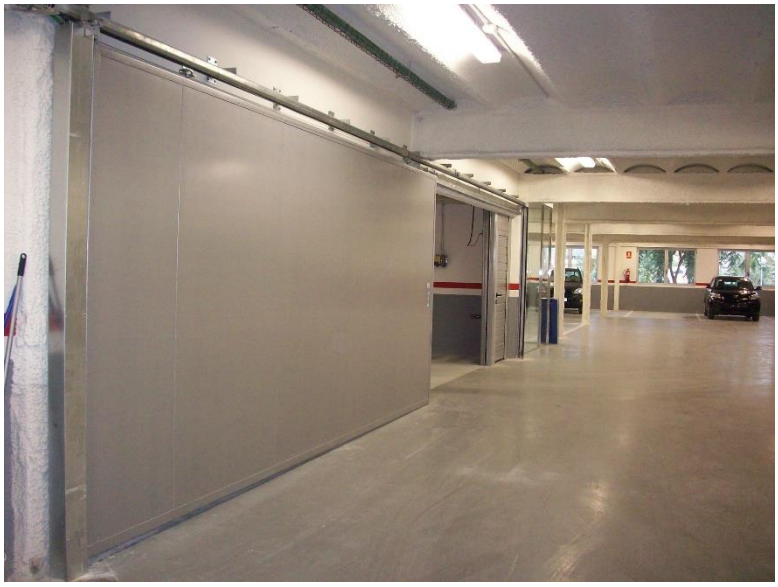
Sliding fire gates



Owner of the EPD:

NGR Technologie Sp. z o.o.
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ITB is the verified member of The European Platform for EPD program operators and LCA practitioner 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: 2024

Product standard: EN 13241:2003+A2:2016 , EN 16034:2014-11

Service Life: 25 years

PCR: ITB-PCR A, v. 1.6

Declared unit: 1 kg

Reasons for performing LCA: B2B

Representativeness: Polish, European

MANUFACTURER

Fig. 1 A view of NGR Technologie Sp. z o.o. production plant located in Grodzisk Wielkopolski (Poland).

NGR Technologie Sp. z o.o. is a provider of solutions for fire, sound and bulletproof protection. The company was established in 2006. Production site NGR Technologie is located in Grodzisk Wielkopolski (Fig. 1). NGR Technologie actively operates on the international market. They have implemented over 3000 projects in 35 countries. The company offers wide range of fire gates for construction sector.

PRODUCTS DESCRIPTION AND APPLICATION

Sliding gates made of thin steel panels filled with rock wool (total thickness 100 mm). Panel placed in steel ferrules (vertical and horizontal). Steel rails to guide the gate. Horizontally or vertically (guillotines) operated sliding gates to created fire barriers in the openings of buildings partitions.

Lightweight gates (from 25 to 36 kg/m^2), with stone wool filling, galvanized steel sheathing, painted on both sides in RAL 7035, closed by gravity, made in classes from EI 60 to EI 240.

Fig. 2. Sliding fire gates produced by NGR Technologie.

Selected characteristics of sliding fire gates :

CE certificate:	0370-CPR-3940, 0370-CPR-3941, 0370-CPR-3943 0370-CPR-3944, 0370-CPR-3945, 0370-CPR-3946 0370-CPR-3947, 0370-CPR-3948, 0370-CPR-3949 0370-CPR-3950, 0370-CPR-5958, 0370-CPR-6565
Construction type:	Horizontal, single-leaf, double-leaf, telescopic sliding gate and versions with doors for EI 60 and EI 120
Class resistance:	EI 60 EI 120 EI 180 EI 240
Weight:	from 25 kg/m² to 36 kg/m²
Maximum dimensions*:	EI 60 Leaf maximum dimensions*: 7 960 mm x 6 245 mm EI 120 Leaf maximum dimensions*: 7 960 mm x 6 245 mm EI 180 and EI 240 Total max. dimensions: 4 500 mm x 4 500 mm

* larger dimensions available on request

More information can be found on NGR Technologie Sp. z o.o. website:
https://www.ngr-technologie.eu

LIFE CYCLE ASSESSMENT (LCA) – general rules applied

Declared Unit

The declaration refers to declared unit (DU) – 1 kg of sliding fire gates

Allocation

The allocation rules used for this EPD are based on general ITB PCR A, v. 1.6. Sliding fire gates production is a line process with multiple co-products in one factory located in Grodzisk Wielkopolski (Poland). Allocation is done on product mass basis.
All impacts from raw materials extraction and processing are allocated in A1 module of EPD. 99% of impacts from line production were inventoried and allocated to all sliding fire gates production. Municipal waste and waste water of whole factory were allocated to module A3. Energy supply was inventoried for whole production process. Emissions in NGR Technologie were measured and were allocated to module A3. Packaging materials were taken into consideration. They are recycled in a closed loop.

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, v. 1.6. The details of systems limits are provided in product technical report. All materials and energy consumption inventoried in factory were included in calculation. Office impacts were also taken into consideration. In the assessment, all significant parameters from gathered production data are considered, i.e. all material used per formulation, utilised thermal energy, internal fuel and electric power consumption, direct production waste, water consumption and all available emission measurements.
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 materials supply and transport*

Raw materials such as steel elements, panels filled with rock wool and cement bonded boards come from local and foreign suppliers. Data on transport of the different products to the manufacturing plants is collected and modelled for factory by assessor. Means of transport include small (< 10 t), average (10 – 16 t) and big (> 16 t) trucks are applied. European standards for average combustion were used for calculations.

Module A3: *Production*

The Fig. 3 shows scheme of sliding fire gates process production by NGR Technologie. Raw materials such as steel elements, panels filled with rock wool and cement bonded boards are delivered to factory located in Grodzisk Wielkopolski, where are manufacturing in a few step process including processing of metal sheets and cutting the panels. Then the gates are packing, palleting and shipment. The facility is ISO 9001 certified.

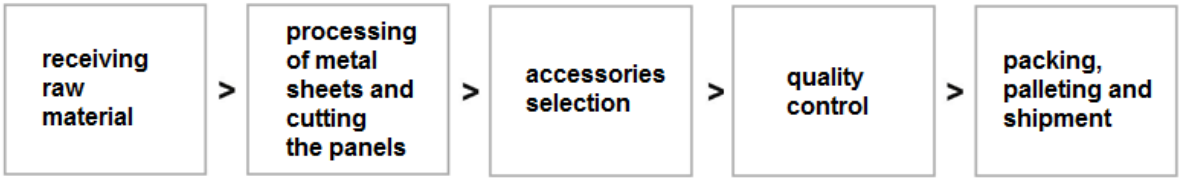

Fig. 3. A scheme of sliding fire gates process production by NGR Technologie (Poland)

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

In the adapted scenario, deconstruction of the sliding fire gate is performed with the use of electrical tools (module C1). The resulting waste is transported to a waste processing plant distant 100 km, on 16-32 t lorry EURO 5 (module C2). It is assumed that at the EoL cycle, 98% of steel is recovered by sorted, crushed and forwarded to recycling (module C3) while the residues undergo landfilling (2%) in the form of inert mixed construction and demolition wastes (module C4). In turn, 80 % of waste panels filled with rock wool and cement bonded boards are processing by material (reuse/recycling) and energy recovery (incineration) while 20 % are landfilling. Module D presents credits resulting from the recycling of the primary steel.

Table 1. End-of-life (EoL) scenario for the sliding fire gates offered by NGR Technologie.

Material	Waste processing (material / energy recovery)	Landfilling
steel	98 %	2 %
panels filled with rock wool and cement bonded board	80 %	20 %

Data quality

The data selected for LCA originate from ITB-LCI questionnaires completed by sliding fire gates using the inventory data, ITB database, Ecoinvent database v. 3.10 and KOBiZE. 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 3.10 supplemented by actual national KOBiZE data. Polish electricity mix used (production) is 0.685 kg CO_2/kWh (KOBiZE 2023).

Data collection period

Primary data provided by NGR Technologie covers a period of 01.01.2022 – 31.12.2022 (1 year). The life cycle assessments were prepared for Poland and Europe as reference area.

Assumptions and estimates

The impacts of the representative of sliding fire gates were aggregated using weighted average of all raw materials for the group. Impacts were inventoried and calculated for all products in sliding fire gates product group and they were presented in Tables 3-6.

Calculation rules

LCA was performed using ITB-LCA tool developed in accordance with EN 15804 + A2.

Databases

The data for the processes comes from Ecoinvent v. 3.10 and ITB-Database. Specific data quality analysis was a part of external audit. Polish electricity mix used (production) is 0.685 kg CO_2/kWh (KOBiZE 2023).

LIFE CYCLE ASSESSMENT (LCA) – Results

Declared unit

The declaration refers to declared unit (DU) – 1 kg of sliding fire gates manufactured by NGR Technologie

Table 2. System boundaries for the environmental characteristic of sliding fire gates manufactured by NGR Technologie

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 3. LCA results for 1 kg of sliding fire gates - environmental impacts

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Global Warming Potential	eq. kg CO_2	1.33E+00	3.72E-01	8.57E-02	1.78E+00	2.11E-02	1.67E-02	4.61E-02	7.04E-02	-2.55E-01
Greenhouse gas potential - fossil	eq. kg CO_2	1.45E+00	3.71E-01	8.39E-02	1.90E+00	1.13E-02	1.66E-02	3.78E-02	3.88E-03	-2.52E-01
Greenhouse gas potential - biogenic	eq. kg CO_2	-1.39E-01	3.79E-04	5.47E-04	-1.38E-01	7.26E-05	5.68E-05	8.25E-03	6.65E-02	-2.30E-03
Global warming potential - land use and land use change	eq. kg CO_2	2.66E-03	1.83E-04	2.87E-05	2.87E-03	3.99E-06	6.52E-06	2.05E-05	8.09E-06	-2.39E-04
Stratospheric ozone depletion potential	eq. kg CFC 11	3.67E-08	1.16E-08	8.50E-09	5.68E-08	2.19E-10	3.85E-09	5.61E-09	8.05E-06	-2.25E-09
Soil and water acidification potential	eq. mol H+	8.04E-03	8.42E-04	8.38E-04	9.72E-03	1.21E-04	6.75E-05	2.00E-04	2.07E-05	-1.02E-03
Eutrophication potential - freshwater	eq. kg P	5.49E-04	2.65E-05	1.33E-04	7.09E-04	2.07E-05	1.12E-06	6.27E-06	8.60E-07	-1.25E-04
Eutrophication potential - seawater	eq. kg N	1.54E-03	2.15E-04	1.27E-04	1.88E-03	1.72E-05	2.04E-05	7.75E-05	8.57E-06	-2.22E-04
Eutrophication potential - terrestrial	eq. mol N	1.62E-02	2.20E-03	1.07E-03	1.94E-02	1.48E-04	2.22E-04	7.78E-04	8.76E-05	-2.31E-03
Potential for photochemical ozone synthesis	eq. kg NMVOC	1.29E-02	1.27E-03	1.04E-03	1.52E-02	4.14E-05	6.80E-05	2.29E-04	2.88E-05	-7.64E-04
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	8.23E-06	1.26E-06	1.16E-07	9.61E-06	1.65E-08	5.89E-08	2.66E-07	1.04E-08	-1.27E-06
Abiotic depletion potential - fossil fuels	MJ	2.30E+01	5.32E+00	1.99E+00	3.03E+01	1.86E-01	2.47E-01	4.86E-01	5.43E-02	-3.18E+00
Water deprivation potential	eq. m^3	7.60E-01	2.65E-02	2.68E-02	8.13E-01	3.79E-03	1.14E-03	7.61E-03	1.50E-03	-1.10E-01

Table 4. LCA results for 1 kg of sliding fire gates - the resource use

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	7.97E-01	8.34E-02	8.79E-02	9.68E-01	1.35E-02	3.54E-03	-2.72E+00	9.15E-04	-4.63E-01
Consumption of renewable primary energy resources used as raw materials	MJ	1.87E+00	0.00E+00	0.00E+00	1.87E+00	0.00E+00	0.00E+00	2.72E+00	0.00E+00	0.00E+00
Total consumption of renewable primary energy resources	MJ	2.66E+00	8.34E-02	8.79E-02	2.83E+00	1.35E-02	3.54E-03	4.15E-03	9.15E-04	-4.63E-01
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	6.09E+00	5.32E+00	1.68E+00	1.31E+01	1.97E-01	2.47E-01	4.60E-01	5.43E-02	-3.18E+00
Consumption of non-renewable primary energy resources used as raw materials	MJ	7.26E-02	0.00E+00	3.93E-01	4.66E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total consumption of non-renewable primary energy resources	MJ	6.16E+00	5.32E+00	2.08E+00	1.35E+01	1.97E-01	2.47E-01	4.60E-01	5.43E-02	-3.18E+00
Consumption of secondary materials	kg	2.84E-01	2.42E-03	1.80E-04	2.87E-01	1.50E-05	8.27E-05	4.07E-04	5.76E-05	3.32E-01
Consumption of renewable secondary fuels	MJ	3.45E-02	3.06E-05	7.02E-07	3.45E-02	8.23E-08	9.11E-07	1.07E-05	6.97E-07	-4.17E-05
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	1.61E-02	6.47E-04	1.27E-04	1.69E-02	6.06E-05	3.10E-05	1.41E-04	3.08E-05	-3.27E-03

Table 5. LCA results for 1 kg of sliding fire gates – additional impacts indicators

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

INA – Indicator Not Assessed

Table 6. LCA results for 1 kg of sliding fire gates – waste categories

Indicator	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
Hazardous waste neutralized	kg	1.67E-01	3.78E-03	2.52E-04	1.71E-01	3.86E-08	2.77E-04	2.04E-03	4.24E-04	-1.58E-01
Non-hazardous waste neutralised	kg	2.15E+00	1.11E-01	1.21E-01	2.38E+00	1.10E-03	4.92E-03	8.02E-01	1.99E-01	-6.09E-01
Radioactive waste	kg	2.64E-05	3.38E-06	3.58E-06	3.33E-05	1.60E-07	1.70E-06	2.51E-06	1.94E-08	-1.07E-05
Components for re-use	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
Materials for recycling	kg	1.16E-02	3.84E-05	4.93E-02	6.10E-02	1.13E-06	7.64E-07	3.27E-01	4.48E-07	-9.35E-05
Materials for energy recovery	kg	6.58E-04	3.22E-07	2.34E-08	6.58E-04	1.58E-09	6.18E-09	2.35E-08	3.30E-09	-6.75E-07
Energy exported	MJ	1.57E-02	2.22E-03	3.61E-03	2.16E-02	5.41E-04	2.74E-04	3.62E-03	1.16E-05	-8.25E-03

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) [x] external [ ] internal
External verification of EPD: Halina Prejzner, PhD Eng LCA, LCI audit and input data verification: Mateusz Kozicki, PhD Verification of LCA: Michał Piasecki, PhD, D.Sc. Eng

Note 1: The declaration owner has the sole ownership, liability and responsibility for the information provided and contained in EPD. Declarations within the same product category but from different programs 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

Signature Not Verified
Dokument podpisany przez Mateusz Kozicki; ITB
Data: 2024.04.22 12:25:17 CEST

- ITB PCR A v. 1.6 General Product Category Rules for Construction Products
- EN 13241:2003+A2:2016 Industrial, commercial, garage doors and gates - Product standard, performance characteristics
- EN 16034:2014 Pedestrian doorsets, industrial, commercial, garage doors and openable windows - Product standard, performance characteristics - Fire resisting and/or smoke control characteristics
- 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 + A2: Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products
- ISO 14067:2018 Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification
- PN-EN 15942:2012 Sustainability of construction works – Environmental product declarations – Communication format business-to-business
- KOBiZE Wskaźniki emisyjności CO_2, SO_2, NO_x, CO i pyłu całkowitego dla energii elektrycznej, 2023

Elektronicznie podpisany przez Agnieszka Winkler-Skalna; ITB
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Instytut Techniki Budowlanej

Instytut Techniki Budowlanej
00-611 Warsaw, Filtrowa 1

Thermal Physics, Acoustics and Environment Department
02-656 Warsaw, Ksawerów 21

CERTIFICATE № 616/2024
of TYPE III ENVIRONMENTAL DECLARATION

Products:

Sliding fire gates

Manufacturer:

NGR TECHNOLOGIE Sp. z o.o.
ul. Zielonogórska 8, 62-065 Grodzisk Wielkopolski, 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 28th March 2024 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, March 2024