Type III Environmental Product Declaration No. 815/2025

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Non-loadbearing walls and doors of ALUFIRE systems

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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-A5, C1-C4 and D modules in accordance with EN 15804 (Cradle-to-Gate with options)

The year of preparing the EPD: 2025

Product standards: EN 16034, EN 14351-1, EN 14351-2, EN 13501-2, EAD 21005-00-0505

Service Life: 10 years for standard product

PCR: ITB-PCR A (PCR based on EN 15804+A2)

Declared unit: 1 m^2

Reasons for performing LCA: B2B

Representativeness: Polish, European, 2023

MANUFACTURER

Fig. 1. The bird's-eye view of ALUFIRE sp. z o.o. in Łysomice near Toruń (Poland)

ALUFIRE sp. z o.o. began operations in 1993 as a manufacturer of aluminium joinery, without fire-resistant requirements. For the first 11 years of its existence, operating primarily in the Polish market, and supplied aluminium system products, fulfilling orders for numerous prestigious buildings in Poland, including government offices and private businesses. Since 2004, the company has continued its operations, focusing primarily on fire protection projects, collaborating with leading architectural and construction companies, creating buildings of the future in Poland and on numerous international markets.

PRODUCTS DESCRIPTION AND APPLICATION

The ALUFIRE system is a range of aluminium, non-loadbearing fire and non fire rated partitions, including curtain walls, doors, and glazed systems, engineered to meet various fire resistance integrity (EI) classifications.

1. Core Construction Principles

- **Material:** All profiles are constructed from EN-AW 6060 T66 aluminium alloy.
- **Thermal Break:** A polyamide PA 66 thermal separator, reinforced with glass fibers, is used to join profile elements, improving thermal performance.
- **Structural Connections:**
  - **"L" Joints (90° corners):** Fabricated by inserting two aluminium corner pieces into the external chambers of miter-cut profiles.
  - **"T" Joints:** Created using dedicated aluminium connectors, which are mechanically fixed to the main profiles with stainless steel or galvanized screws.
- **Fasteners:** All joining components (screws, bolts, rivets, etc.) are made of stainless or galvanized steel.
- **Profile Design:** Standard profiles feature a multi-chambered structure (typically three chambers) to accommodate insulation.
- **Fire Sealing:** Intumescent gaskets are applied to the glazing/panel side of the profiles and between frame and leaf or leaf and leaf . These seals expand dramatically when exposed to heat, sealing off gaps and preventing the spread of fire and smoke.

2. Fire Rating Compliance through Insulation

The fire resistance class (EI) is achieved by filling the profile chambers with specific insulation materials according to a defined strategy:

- **No Rating (None):** All profile chambers remain empty.
- **Class EI15 to EI30:** Only the central chamber of the profile is filled with an approved insulation insert.
- **Class EI45 to EI60:** All three chambers within the profile are filled with insulation inserts.
- **Class EI90 to EI120:** All chambers must be filled with a specific type of high-performance insulation insert, namely **PALSTOP-PAX plates by BRANDDEX**. For the highest class (EI120), a double-layer or an extra-large intumescent gasket is also mandatory.

Approved Insulation Materials: The system is compatible with inserts from several leading manufacturers, including gypsum plasterboard type F, Knauf FIREBOARD, Branddex PALSTOP-PAX, Promat PROMATECT-H, and mineral wool of a specified density (145-167 kg/m³).

3. System Portfolio and Fire Ratings

The ALUFIRE brand encompasses several systems tailored for different aesthetic and performance needs:

- **Mullion-Transom Walls & Doors:** This is the standard, versatile system for constructing both walls and doors, offering the **broadest range of fire ratings, including the highest classes EI90 and EI120 and non fire rated** .
- **Mullion-Free Glazed Walls (e.g., AVL, AVL Slim, ASL):** These systems create seamless glass partitions with minimal visual obstruction. They are available for ratings up to **EI60** (AVL, AVL Slim) or **EI45** (ASL). The **AVL Slim** variant uses a notably narrower profile for a more aesthetic look.
- **Office Line Systems (Neo FR, Neo FR+, Neo Office, Neo Office+ , AOL, AOL Slim):** Designed for interior partitions in office environments. The **Neo FR, Neo FR+** lines provide fire resistance up to **EI60**, while the **Neo Office, Neo Office+, AOL and AOL Slim (Office Line)** is intended for applications where no fire rating is required.

4. Infill Options: Glazing and Opaque Panels

The openings within the framed system can be filled with the following:

- **Fire-Rated Glazing:** The system is certified for use with specialty fire-resistant glass from major manufacturers such as **AGC (Pyrobel series), Pilkington (Pyrostop series), and Vetrotech Saint-Gobain (Contraflam, Ekoflam)**. The specific glass type (e.g., Pyrobel 16 for EI30 vs. Pyrobel 25 for EI60) must be selected to match the target fire rating of the wall system.
- Non fire-rated glazing: AGC, Pilkington, Glass Solution
- **Opaque Fire-Rated Panels:** These are multi-layer panels consisting of a fire-resistant core (e.g., gypsum plasterboards) faced with aluminium or steel sheet. The construction of these panels is graded to the fire rating:
    - **EI15/EI30:** A core of two 12.5 mm type F plasterboards or a core of mineral wool .
    - **EI45/EI60:** A core of three 12.5 mm type F plasterboards or a core with two 12.5 mm type F plasterboards and central layer with mineral wool.
    - **EI120:** A core of two 30 mm Knauf Fireboard plates.

5. Door-Specific Components

Doors incorporate all the general principles above and are enhanced with specific features:

- **Frame and Leaf:** Both the door frame and leaf are fitted with a **rebate strip** and a **modifier profile**. These are equipped with durable EPDM gaskets for acoustic and smoke sealing, in addition to the crucial intumescent gaskets.
- **Security: Steel reinforcing plates** are installed on the hinge side of the frame to resist forced entry.
- **Threshold Options:** The bottom seal can be provided by a fixed **doorstep** (12 mm or 20 mm) or an **automatic drop seal** that engages only when the door is closed.
- **Hardware:** The system is designed to integrate with a comprehensive suite of hardware, including hinges, locks, door closers, panic devices, electromagnetic holders, and access control systems.

Final Overview:
The ALUFIRE system provides a flexible, engineered solution for modern fire compartmentation. Its performance is based on the synergy of its **thermally broken aluminium profile, the strategic filling of profile chambers with insulation, and the use of certified fire-resistant and non fire rated infills**. The choice between a standard mullion-transom system and a sleek mullion-free system depends on the architectural design, required fire resistance level, and application (exterior vs. interior).

More information about Non-loadbearing walls and doors of ALUFIRE systems on the manufacturer's website.

LIFE CYCLE ASSESSMENT (LCA) – general rules applied

Declared unit

The declaration refers to declared unit (DU) – 1 m^2 of non-loadbearing walls and doors. The results are presented in 4 average variants: single-glazed with fire resistance (45 kg), single-glazed without resistance (30 kg), double-glazed with resistance (80 kg) and double-glazed without resistance (60 kg).

Allocation

The allocation rules used for this EPD are based on general ITB PCR A. Production of non-loadbearing walls and doors is a line process executed by ALUFIRE sp. z o.o. in plant located in Łysomice near Toruń (Poland). Allocation was done on product mass basis. All impacts from raw materials extraction and processing are allocated in module A1 of the LCA. Impacts from the global line production of ALUFIRE sp. z o.o. were inventoried and were allocated in non-loadbearing walls and doors from aluminium. 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-A5, 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 materials supply and transport*

Glass, Aluminium profiles, thermal breaks and gasket, packaging materials and rest of components come from local suppliers and are transported by lorries. For calculation purposes Polish and European fuel averages were applied.

Module A3: *Production*

The production of non-load-bearing walls and doors involves receiving component deliveries at the plant. Individual components are then subjected to dedicated processes. Profiles are cut and processed. Thermal breaks are connected to the profiles by crimping, glazing beads are processed. Glass sheets are cut to size, and panels are produced. Finished components are assembled and packaged for transport to the customer. All aluminium comes from specific local supplier, providing verified EPD for its products. A scheme of the production process is presented in Fig. 2.

Module A4 and A5: transport to consumer and installation

Vehicle transport at distance 100 km is considered (emission standard: Euro 5) with 100% load capacity. Assembly of the element using a 2kW screwdriver, power consumption for assembly 0.25kWh.

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

It is assumed that at the End-of-Life, the non-loadbearing walls and doors are dismantled using power tools. Recovered material is transported to waste processing plant distant of about 100 km using > 24t lorry with 85% capacity utilization and fuel consumption of 35 L per 100 km (module C2). About 98% of the resulting aluminium scrap undergo recycling after shredding (C3) while the

remaining 2% of them is forwarded to landfill in the form of mixed construction and demolition waste. Environmental burdens declared in module C4 are associated with treatment of aluminium scrap, prepared for recycling at refiner and waste-specific emissions to air and groundwater via landfill. A potential credit resulting from the recycling of the aluminium scrap are presented in module D (calculated for the primary aluminium content). A potential credit resulting from the recycling of the aluminium scrap and recycled glass are presented in module D (calculated for the primary aluminium content).

Table 4. End-of-life scenario for non-loadbearing walls and doors

Material	Material recovery	Recycling	Landfilling
Aluminium/metal scrap	100 %	95 %	5 %
Glass	100%	30%	70%

Electricity at end-of-life (module C) has been modelled using an average Polish electricity mix as the location where the product reaches end-of-life is unknown.

Data quality
The values determined to calculate the LCA originate from verified ALUFIRE sp. z o.o. inventory data. No data collected is older than five years and no generic datasets used are older than ten years. The representativeness, completeness, reliability, and consistency is judged as good. The background data for the processes come from the following resources database Ecoinvent v.3.11(EPDM, gaskets, additives, packaging, polymers) and specific EPD for aluminium input material. Specific (LCI) data quality analysis was a part of the input data verification.

Data collection period
The data for manufacture of the declared products refer to period between 01.01.2023 – 31.12.2023 (1 year). The life cycle assessments were prepared for Poland and Europe as reference area.

Assumptions and estimates
The impacts of non-loadbearing walls and doors were aggregated using weighted average.

Calculation rules
LCA was done in accordance with ITB PCR A document.

Databases
The data for the processes come from the following databases: Ecoinvent v.3.11, specific EPDs, ITB-Database. Specific data quality analysis was a part of external ISO 14001 audit.

Additional information

Polish electricity is based on Ecoinvent v.3.11supplemented by actual national KOBiZE data. The emission factor for electricity used for production is 0.685 kg CO_2/kWh. As a general rule, no particular environmental or health protection measures other than those specified by law are necessary. Biomass content in product and packing is marginal.

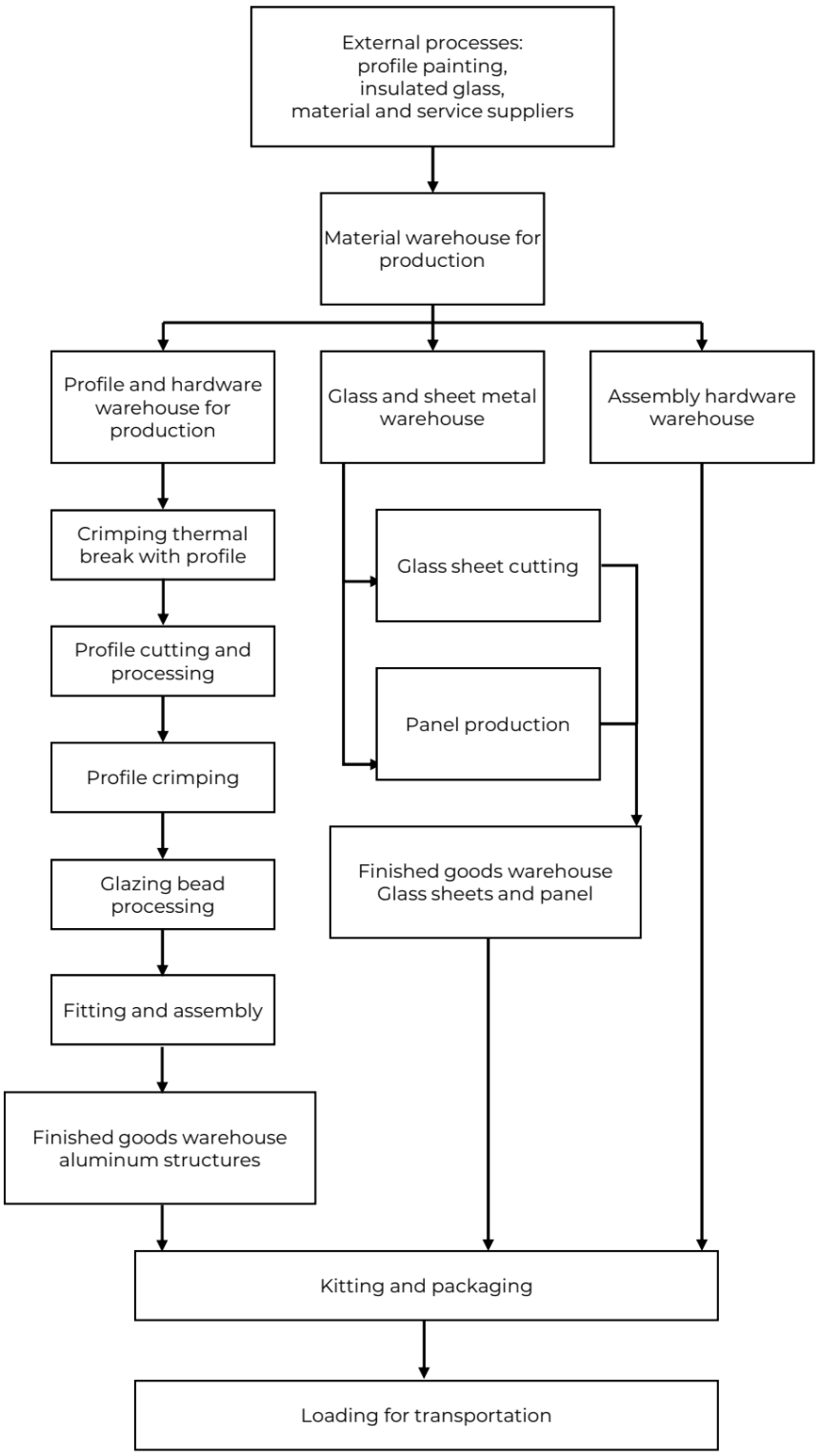

Fig. 2. The scheme of production by ALUFIRE sp. z o.o. in Łysomice near Toruń

LIFE CYCLE ASSESSMENT (LCA) – Results

Declared unit

The declaration refers to declared unit (DU) – 1 m^2 of non-loadbearing walls and doors produced by ALUFIRE sp. z o.o. in Łysomice near Toruń (Poland).

Table 5. System boundaries for the environmental characteristic of the product.

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**	**MD**	**MD**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MD**	**MD**	**MD**	**MD**	**MD**

Table 6. Life cycle assessment (LCA) results for specific products (single-glazed without fire resistance) – environmental impacts (DU: 1 m^2)

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Global Warming Potential	eq. kg CO_2	3.63E+01	2.20E+00	2.24E+00	4.07E+01	5.89E-01	1.71E-01	1.75E-01	3.67E-01	1.26E-01	1.47E-01	-6.39E+00
Greenhouse potential - fossil	eq. kg CO_2	3.61E+01	2.19E+00	2.24E+00	4.05E+01	5.89E-01	2.18E-02	1.72E-01	3.67E-01	9.27E-02	1.45E-01	-6.29E+00
Greenhouse potential - biogenic	eq. kg CO_2	2.30E-01	1.40E-03	2.67E-03	2.34E-01	3.88E-04	7.10E-05	3.10E-03	2.41E-04	3.29E-02	1.60E-03	-9.81E-02
Global warming potential - land use and land use change	eq. kg CO_2	2.37E-01	7.28E-04	2.71E-04	2.38E-01	1.96E-04	4.09E-05	4.04E-05	1.22E-04	1.19E-04	1.33E-04	-3.02E-03
Stratospheric ozone depletion potential	eq. kg CFC 11	1.14E-06	4.78E-08	4.06E-08	1.23E-06	1.17E-08	1.65E-09	3.02E-09	7.30E-09	1.53E-08	4.75E-08	-3.71E-07
Soil and water acidification potential	eq. mol H+	2.28E-01	7.04E-03	2.01E-02	2.55E-01	1.23E-03	1.74E-04	1.67E-03	7.64E-04	6.55E-04	1.30E-03	-5.93E-02
Eutrophication potential - freshwater	eq. kg P	1.04E-02	1.50E-04	2.98E-03	1.35E-02	3.99E-05	1.42E-05	2.86E-04	2.49E-05	4.47E-05	1.46E-05	-2.20E-03
Eutrophication potential - seawater	eq. kg N	4.53E-02	2.37E-03	2.72E-03	5.04E-02	2.95E-04	2.59E-05	2.38E-04	1.84E-04	2.10E-04	4.65E-04	-6.50E-03
Eutrophication potential - terrestrial	eq. mol N	4.25E-01	2.58E-02	2.35E-02	4.75E-01	3.18E-03	2.71E-04	2.04E-03	1.98E-03	2.06E-03	5.07E-03	-1.61E-01
Potential for photochemical ozone synthesis	eq. kg NMVOC	1.31E-01	1.07E-02	8.97E-03	1.51E-01	2.04E-03	9.94E-05	5.71E-04	1.27E-03	5.91E-04	1.46E-03	-1.62E-02
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	9.86E-05	7.56E-06	1.04E-06	1.07E-04	1.96E-06	1.56E-06	2.27E-07	1.22E-06	1.23E-06	4.72E-07	-2.78E-04
Abiotic depletion potential - fossil fuels	MJ	4.02E+02	3.11E+01	5.21E+01	4.85E+02	8.28E+00	2.77E-01	2.57E+00	5.16E+00	1.63E+00	3.49E+00	-5.17E+01
Water deprivation potential	eq. m^3	2.61E+01	1.63E-01	6.82E-01	2.69E+01	4.05E-02	3.35E-02	5.23E-02	2.52E-02	2.29E-02	1.59E-02	-8.13E+00

Table 7. Life cycle assessment (LCA) results for specific product (single-glazed without fire resistance) – additional impacts indicators (DU: 1 m^2)

Indicator	Unit	A1-A3	A4-A5	C1-C4	D
Particulate matter	disease incidence	INA	INA	INA	INA
Potential human exposure efficiency relative to U235	eg. kBq U235	INA	INA	INA	INA
Potential comparative toxic unit for ecosystems	CTUe	INA	INA	INA	INA
Potential comparative toxic unit for humans (cancer effects)	CTUh	INA	INA	INA	INA
Potential comparative toxic unit for humans (non-cancer effects)	CTUh	INA	INA	INA	INA
Potential soil quality index	dimensionless	INA	INA	INA	INA

Table 8. Life cycle assessment (LCA) results for specific product (single-glazed without fire resistance) - the resource use (DU: 1 m^2)

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	1.06E+02	5.06E-01	2.42E+00	1.09E+02	1.42E-01	1.02E+00	1.87E-01	8.86E-02	1.40E-01	4.07E-02	-1.43E+00
Consumption of renewable primary energy resources used as raw materials	MJ	6.20E+02	0.00E+00	0.00E+00	6.20E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total consumption of renewable primary energy resources	MJ	7.26E+02	5.06E-01	2.42E+00	7.29E+02	1.42E-01	1.02E+00	1.87E-01	8.86E-02	1.40E-01	4.07E-02	-1.43E+00
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	5.50E+02	3.11E+01	4.00E+01	6.21E+02	8.28E+00	2.78E-01	2.72E+00	5.16E+00	1.63E+00	3.49E+00	-1.47E+01
Consumption of non-renewable primary energy resources used as raw materials	MJ	7.22E+00	0.00E+00	1.21E+01	1.93E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total consumption of non-renewable primary energy resources	MJ	5.57E+02	3.11E+01	5.21E+01	6.40E+02	8.28E+00	2.78E-01	2.72E+00	5.16E+00	1.63E+00	3.49E+00	-1.47E+01
Consumption of secondary materials	kg	2.06E+01	1.39E-02	4.71E-03	2.06E+01	3.84E-03	4.11E-04	2.08E-04	2.39E-03	8.41E-04	1.21E-03	-3.67E-02
Consumption of renew. secondary fuels	MJ	3.03E-02	1.82E-04	1.27E-05	3.05E-02	4.86E-05	1.79E-05	1.14E-06	3.03E-05	3.96E-05	2.16E-05	-5.38E-03
Consumption of non-renewable secondary fuels	MJ	1.27E-20	0.00E+00	0.00E+00	1.27E-20	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	m^3	5.24E-01	3.76E-03	2.60E-02	5.53E-01	1.11E-03	7.79E-04	8.37E-04	6.94E-04	1.25E-03	3.81E-03	-2.17E-01

Table 9. Life cycle assessment (LCA) results for specific product (single-glazed without fire resistance) – waste categories (DU: 1 m^2)

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste	kg	4.80E+00	4.46E-02	2.97E-01	5.15E+00	1.21E-02	1.21E-03	5.32E-07	7.53E-03	5.62E-03	5.63E-03	-4.35E-01
Non-hazardous waste	kg	9.93E+01	9.56E-01	1.48E+01	1.15E+02	2.55E-01	5.36E-02	1.52E-02	1.59E-01	2.79E+00	6.58E-02	-1.28E+01
Radioactive waste	kg	9.29E+01	9.15E-06	4.38E-06	9.29E+01	2.67E-06	4.72E-07	2.21E-06	1.66E-06	1.01E-05	2.15E-05	-2.14E-04
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	0.00E+00	0.00E+00
Materials for recycling	kg	1.44E+00	3.72E-04	1.13E-02	1.45E+00	6.30E-05	1.88E-04	1.56E-05	3.92E-05	1.19E+00	1.96E-04	-1.04E+00
Materials for energy recovery	kg	2.56E-05	1.97E-06	4.44E-07	2.80E-05	5.33E-07	3.35E-08	2.19E-08	3.32E-07	6.52E-08	2.41E-07	-1.06E-05
Exported Energy	MJ	2.85E+00	1.36E-02	9.94E-03	2.88E+00	3.49E-03	2.78E-04	7.46E-03	2.17E-03	1.48E-02	8.16E-03	-3.09E-01

Table 10. Life cycle assessment (LCA) results for specific products (single glazed with fire resistance) – environmental impacts (DU: 1 m^2)

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Global Warming Potential	eq. kg CO_2	1.05E+02	5.95E+00	3.47E+00	1.15E+02	9.08E-01	2.64E-01	2.70E-01	5.66E-01	1.94E-01	2.26E-01	-9.84E+00
Greenhouse potential - fossil	eq. kg CO_2	1.05E+02	5.94E+00	3.47E+00	1.15E+02	9.07E-01	3.36E-02	2.65E-01	5.65E-01	1.43E-01	2.23E-01	-9.68E+00
Greenhouse potential - biogenic	eq. kg CO_2	2.98E-01	3.80E-03	4.14E-03	3.06E-01	5.97E-04	1.09E-04	4.78E-03	3.72E-04	5.07E-02	2.47E-03	-1.51E-01
Global warming potential - land use and land use change	eq. kg CO_2	2.25E-01	1.97E-03	4.20E-04	2.27E-01	3.02E-04	6.29E-05	6.22E-05	1.88E-04	1.83E-04	2.04E-04	-4.65E-03
Stratospheric ozone depletion potential	eq. kg CFC 11	1.18E-06	1.30E-07	6.29E-08	1.37E-06	1.80E-08	2.55E-09	4.65E-09	1.12E-08	2.36E-08	7.32E-08	-5.72E-07
Soil and water acidification potential	eq. mol H+	4.42E-01	1.91E-02	3.11E-02	4.93E-01	1.89E-03	2.68E-04	2.57E-03	1.18E-03	1.01E-03	2.00E-03	-9.14E-02
Eutrophication potential - freshwater	eq. kg P	1.21E-02	4.06E-04	4.62E-03	1.72E-02	6.14E-05	2.18E-05	4.41E-04	3.83E-05	6.88E-05	2.25E-05	-3.38E-03
Eutrophication potential - seawater	eq. kg N	4.60E-02	6.43E-03	4.21E-03	5.66E-02	4.54E-04	3.99E-05	3.66E-04	2.83E-04	3.23E-04	7.16E-04	-1.00E-02
Eutrophication potential - terrestrial	eq. mol N	4.03E-01	6.99E-02	3.64E-02	5.09E-01	4.89E-03	4.18E-04	3.14E-03	3.05E-03	3.17E-03	7.81E-03	-2.48E-01
Potential for photochemical ozone synthesis	eq. kg NMVOC	1.13E-01	2.89E-02	1.39E-02	1.56E-01	3.14E-03	1.53E-04	8.80E-04	1.96E-03	9.11E-04	2.25E-03	-2.49E-02
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	2.60E-04	2.05E-05	1.61E-06	2.82E-04	3.02E-06	2.40E-06	3.50E-07	1.88E-06	1.89E-06	7.27E-07	-4.28E-04
Abiotic depletion potential - fossil fuels	MJ	1.33E+03	8.43E+01	8.06E+01	1.49E+03	1.28E+01	4.27E-01	3.96E+00	7.95E+00	2.51E+00	5.37E+00	-7.96E+01
Water deprivation potential	eq. m^3	4.96E+01	4.42E-01	1.06E+00	5.11E+01	6.24E-02	5.16E-02	8.05E-02	3.89E-02	3.52E-02	2.44E-02	-1.25E+01

Table 11. Life cycle assessment (LCA) results for specific product (single glazed with fire resistance) – additional impacts indicators (DU: 1 m^2)

Indicator	Unit	A1-A3	A4-A5	C1-C4	D
Particulate matter	disease incidence	INA	INA	INA	INA
Potential human exposure efficiency relative to U235	eg. kBq U235	INA	INA	INA	INA
Potential comparative toxic unit for ecosystems	CTUe	INA	INA	INA	INA
Potential comparative toxic unit for humans (cancer effects)	CTUh	INA	INA	INA	INA
Potential comparative toxic unit for humans (non-cancer effects)	CTUh	INA	INA	INA	INA
Potential soil quality index	dimensionless	INA	INA	INA	INA

Table 12. Life cycle assessment (LCA) results for specific product (single glazed with fire resistance) - the resource use (DU: 1 m^2)

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	2.42E+02	1.37E+00	3.75E+00	2.47E+02	2.19E-01	1.56E+00	2.87E-01	1.36E-01	2.15E-01	6.26E-02	-2.20E+00
Consumption of renewable primary energy resources used as raw materials	MJ	1.08E+03	0.00E+00	0.00E+00	1.08E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total consumption of renewable primary energy resources	MJ	1.33E+03	1.37E+00	3.75E+00	1.33E+03	2.19E-01	1.56E+00	2.87E-01	1.36E-01	2.15E-01	6.26E-02	-2.20E+00
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	1.60E+03	8.43E+01	6.19E+01	1.75E+03	1.28E+01	4.27E-01	4.19E+00	7.95E+00	2.51E+00	5.38E+00	-2.27E+01
Consumption of non-renewable primary energy resources used as raw materials	MJ	1.09E+01	0.00E+00	1.87E+01	2.96E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total consumption of non-renewable primary energy resources	MJ	1.61E+03	8.43E+01	8.06E+01	1.78E+03	1.28E+01	4.27E-01	4.19E+00	7.95E+00	2.51E+00	5.38E+00	-2.27E+01
Consumption of secondary materials	kg	5.89E+00	3.77E-02	7.29E-03	5.94E+00	5.92E-03	6.32E-04	3.20E-04	3.69E-03	1.29E-03	1.87E-03	-5.65E-02
Consumption of renew. secondary fuels	MJ	3.82E-02	4.94E-04	1.97E-05	3.87E-02	7.48E-05	2.75E-05	1.75E-06	4.66E-05	6.09E-05	3.32E-05	-8.28E-03
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	0.00E+00	0.00E+00
Net consumption of freshwater	m^3	7.62E-01	1.02E-02	4.03E-02	8.13E-01	1.71E-03	1.20E-03	1.29E-03	1.07E-03	1.93E-03	5.87E-03	-3.35E-01

Table 13. Life cycle assessment (LCA) results for specific product (single glazed with fire resistance) – waste categories (DU: 1 m^2)

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste	kg	5.48E+00	1.21E-01	4.60E-01	6.06E+00	1.86E-02	1.87E-03	8.20E-07	1.16E-02	8.65E-03	8.66E-03	-6.71E-01
Non-hazardous waste	kg	1.54E+02	2.59E+00	2.29E+01	1.79E+02	3.93E-01	8.25E-02	2.34E-02	2.45E-01	4.30E+00	1.01E-01	-1.97E+01
Radioactive waste	kg	1.44E+02	2.48E-05	6.78E-06	1.44E+02	4.11E-06	7.27E-07	3.40E-06	2.56E-06	1.56E-05	3.31E-05	-3.30E-04
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	0.00E+00	0.00E+00
Materials for recycling	kg	5.86E+00	1.01E-03	1.20E-02	5.88E+00	9.70E-05	2.90E-04	2.41E-05	6.04E-05	1.84E+00	3.02E-04	-1.60E+00
Materials for energy recovery	kg	3.99E-05	5.35E-06	6.87E-07	4.60E-05	8.21E-07	5.16E-08	3.36E-08	5.12E-07	1.00E-07	3.71E-07	-1.64E-05
Exported Energy	MJ	6.42E+00	3.69E-02	1.54E-02	6.48E+00	5.37E-03	4.28E-04	1.15E-02	3.35E-03	2.28E-02	1.26E-02	-4.76E-01

Table 14. Life cycle assessment (LCA) results for specific product (double glazed without fire resistance) – environmental impacts (DU: 1 m^2)

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Global Warming Potential	eq. kg CO_2	6.72E+01	4.46E+00	4.55E+00	7.63E+01	1.24E+00	3.59E-01	3.67E-01	7.70E-01	2.64E-01	3.08E-01	-1.34E+01
Greenhouse potential - fossil	eq. kg CO_2	6.71E+01	4.46E+00	4.55E+00	7.61E+01	1.24E+00	4.57E-02	3.60E-01	7.69E-01	1.94E-01	3.04E-01	-1.32E+01
Greenhouse potential - biogenic	eq. kg CO_2	3.08E-01	2.85E-03	5.43E-03	3.16E-01	8.13E-04	1.49E-04	6.50E-03	5.06E-04	6.91E-02	3.36E-03	-2.06E-01
Global warming potential - land use and land use change	eq. kg CO_2	6.02E-01	1.48E-03	5.51E-04	6.04E-01	4.11E-04	8.57E-05	8.47E-05	2.56E-04	2.49E-04	2.78E-04	-6.34E-03
Stratospheric ozone depletion potential	eq. kg CFC 11	2.83E-06	9.71E-08	8.25E-08	3.01E-06	2.46E-08	3.47E-09	6.33E-09	1.53E-08	3.21E-08	9.96E-08	-7.79E-07
Soil and water acidification potential	eq. mol H+	4.73E-01	1.43E-02	4.08E-02	5.28E-01	2.57E-03	3.65E-04	3.50E-03	1.60E-03	1.37E-03	2.73E-03	-1.24E-01
Eutrophication potential - freshwater	eq. kg P	2.08E-02	3.04E-04	6.07E-03	2.71E-02	8.36E-05	2.97E-05	6.00E-04	5.21E-05	9.37E-05	3.06E-05	-4.61E-03
Eutrophication potential - seawater	eq. kg N	8.51E-02	4.82E-03	5.53E-03	9.55E-02	6.18E-04	5.43E-05	4.98E-04	3.85E-04	4.39E-04	9.74E-04	-1.36E-02
Eutrophication potential - terrestrial	eq. mol N	8.38E-01	5.24E-02	4.78E-02	9.38E-01	6.67E-03	5.69E-04	4.27E-03	4.15E-03	4.32E-03	1.06E-02	-3.37E-01
Potential for photochemical ozone synthesis	eq. kg NMVOC	2.60E-01	2.17E-02	1.82E-02	3.00E-01	4.27E-03	2.08E-04	1.20E-03	2.66E-03	1.24E-03	3.06E-03	-3.39E-02
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	1.56E-04	1.54E-05	2.12E-06	1.74E-04	4.11E-06	3.27E-06	4.77E-07	2.56E-06	2.57E-06	9.89E-07	-5.82E-04
Abiotic depletion potential - fossil fuels	MJ	6.77E+02	6.32E+01	1.06E+02	8.46E+02	1.74E+01	5.81E-01	5.39E+00	1.08E+01	3.42E+00	7.32E+00	-1.08E+02
Water deprivation potential	eq. m^3	5.38E+01	3.31E-01	1.39E+00	5.55E+01	8.50E-02	7.03E-02	1.10E-01	5.29E-02	4.79E-02	3.33E-02	-1.70E+01

Table 15. Life cycle assessment (LCA) results for specific product (double glazed without fire resistance)– additional impacts indicators (DU: 1 m^2)

Indicator	Unit	A1-A3	A4-A5	C1-C4	D
Particulate matter	disease incidence	INA	INA	INA	INA
Potential human exposure efficiency relative to U235	eg. kBq U235	INA	INA	INA	INA
Potential comparative toxic unit for ecosystems	CTUe	INA	INA	INA	INA
Potential comparative toxic unit for humans (cancer effects)	CTUh	INA	INA	INA	INA
Potential comparative toxic unit for humans (non-cancer effects)	CTUh	INA	INA	INA	INA
Potential soil quality index	dimensionless	INA	INA	INA	INA

Table 16. Life cycle assessment (LCA) results for specific product (double glazed without fire resistance)– - the resource use (DU: 1 m^2)

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	2.27E+02	1.03E+00	4.92E+00	2.33E+02	2.98E-01	2.13E+00	3.91E-01	1.86E-01	2.93E-01	8.52E-02	-3.00E+00
Consumption of renewable primary energy resources used as raw materials	MJ	1.35E+03	0.00E+00	0.00E+00	1.35E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total consumption of renewable primary energy resources	MJ	1.58E+03	1.03E+00	4.92E+00	1.58E+03	2.98E-01	2.13E+00	3.91E-01	1.86E-01	2.93E-01	8.52E-02	-3.00E+00
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	1.07E+03	6.32E+01	8.13E+01	1.21E+03	1.74E+01	5.82E-01	5.71E+00	1.08E+01	3.42E+00	7.32E+00	-3.08E+01
Consumption of non-renewable primary energy resources used as raw materials	MJ	1.59E+01	0.00E+00	2.45E+01	4.04E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total consumption of non-renewable primary energy resources	MJ	1.08E+03	6.32E+01	1.06E+02	1.25E+03	1.74E+01	5.82E-01	5.71E+00	1.08E+01	3.42E+00	7.32E+00	-3.08E+01
Consumption of secondary materials	kg	4.11E+01	2.82E-02	9.56E-03	4.11E+01	8.06E-03	8.61E-04	4.35E-04	5.02E-03	1.76E-03	2.54E-03	-7.70E-02
Consumption of renew. secondary fuels	MJ	5.93E-02	3.71E-04	2.58E-05	5.97E-02	1.02E-04	3.75E-05	2.38E-06	6.35E-05	8.29E-05	4.53E-05	-1.13E-02
Consumption of non-renewable secondary fuels	MJ	2.53E-20	0.00E+00	0.00E+00	2.53E-20	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	m^3	1.10E+00	7.64E-03	5.29E-02	1.16E+00	2.34E-03	1.63E-03	1.75E-03	1.45E-03	2.63E-03	7.99E-03	-4.56E-01

Table 17. Life cycle assessment (LCA) results for specific product (double glazed without fire resistance)– waste categories (DU: 1 m^2)

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste	kg	1.01E+01	9.06E-02	6.04E-01	1.08E+01	2.53E-02	2.54E-03	1.12E-06	1.58E-02	1.18E-02	1.18E-02	-9.13E-01
Non-hazardous waste	kg	1.06E+02	1.94E+00	3.00E+01	1.38E+02	5.35E-01	1.12E-01	3.19E-02	3.33E-01	5.85E+00	1.38E-01	-2.68E+01
Radioactive waste	kg	9.29E+01	1.86E-05	8.90E-06	9.29E+01	5.60E-06	9.89E-07	4.63E-06	3.49E-06	2.12E-05	4.51E-05	-4.50E-04
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	0.00E+00	0.00E+00
Materials for recycling	kg	1.44E+00	7.56E-04	1.26E-02	1.46E+00	1.32E-04	3.95E-04	3.28E-05	8.23E-05	2.50E+00	4.12E-04	-2.18E+00
Materials for energy recovery	kg	3.74E-05	4.01E-06	9.02E-07	4.23E-05	1.12E-06	7.03E-08	4.58E-08	6.97E-07	1.37E-07	5.05E-07	-2.23E-05
Exported Energy	MJ	6.68E+00	2.77E-02	2.02E-02	6.73E+00	7.31E-03	5.83E-04	1.56E-02	4.56E-03	3.10E-02	1.71E-02	-6.48E-01

Table 18. Life cycle assessment (LCA) results for specific product (double glazed without fire resistance)– environmental impacts (DU: 1 m^2)

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Global Warming Potential	eq. kg CO_2	1.30E+02	5.95E+00	6.07E+00	1.42E+02	1.64E+00	4.78E-01	4.88E-01	1.02E+00	3.51E-01	4.09E-01	-1.78E+01
Greenhouse potential - fossil	eq. kg CO_2	1.30E+02	5.94E+00	6.07E+00	1.42E+02	1.64E+00	6.08E-02	4.79E-01	1.02E+00	2.58E-01	4.04E-01	-1.75E+01
Greenhouse potential - biogenic	eq. kg CO_2	4.60E+00	3.80E-03	7.24E-03	4.61E+00	1.08E-03	1.98E-04	8.65E-03	6.73E-04	9.18E-02	4.47E-03	-2.74E-01
Global warming potential - land use and land use change	eq. kg CO_2	6.64E-01	1.97E-03	7.34E-04	6.67E-01	5.46E-04	1.14E-04	1.13E-04	3.40E-04	3.32E-04	3.70E-04	-8.43E-03
Stratospheric ozone depletion potential	eq. kg CFC 11	3.15E-06	1.30E-07	1.10E-07	3.39E-06	3.27E-08	4.61E-09	8.42E-09	2.03E-08	4.27E-08	1.32E-07	-1.04E-06
Soil and water acidification potential	eq. mol H+	6.86E-01	1.91E-02	5.45E-02	7.59E-01	3.42E-03	4.86E-04	4.66E-03	2.13E-03	1.83E-03	3.63E-03	-1.65E-01
Eutrophication potential - freshwater	eq. kg P	2.25E-02	4.06E-04	8.09E-03	3.10E-02	1.11E-04	3.96E-05	7.98E-04	6.93E-05	1.25E-04	4.07E-05	-6.13E-03
Eutrophication potential - seawater	eq. kg N	9.18E-02	6.43E-03	7.37E-03	1.06E-01	8.22E-04	7.22E-05	6.62E-04	5.12E-04	5.84E-04	1.30E-03	-1.81E-02
Eutrophication potential - terrestrial	eq. mol N	9.38E-01	6.99E-02	6.37E-02	1.07E+00	8.86E-03	7.57E-04	5.68E-03	5.52E-03	5.75E-03	1.41E-02	-4.48E-01
Potential for photochemical ozone synthesis	eq. kg NMVOC	2.61E-01	2.89E-02	2.43E-02	3.14E-01	5.69E-03	2.77E-04	1.59E-03	3.54E-03	1.65E-03	4.07E-03	-4.51E-02
Potential for depletion of abiotic resources - non-fossil resources	eq. kg Sb	2.72E-04	2.05E-05	2.83E-06	2.95E-04	5.46E-06	4.36E-06	6.34E-07	3.40E-06	3.42E-06	1.32E-06	-7.75E-04
Abiotic depletion potential - fossil fuels	MJ	1.51E+03	8.43E+01	1.41E+02	1.74E+03	2.31E+01	7.73E-01	7.17E+00	1.44E+01	4.55E+00	9.73E+00	-1.44E+02
Water deprivation potential	eq. m^3	7.36E+01	4.42E-01	1.85E+00	7.59E+01	1.13E-01	9.34E-02	1.46E-01	7.04E-02	6.37E-02	4.42E-02	-2.27E+01

Table 19. Life cycle assessment (LCA) results for specific product (double glazed with fire resistance) – additional impacts indicators (DU: 1 m^2)

Indicator	Unit	A1-A3	A4-A5	C1-C4	D
Particulate matter	disease incidence	INA	INA	INA	INA
Potential human exposure efficiency relative to U235	eg. kBq U235	INA	INA	INA	INA
Potential comparative toxic unit for ecosystems	CTUe	INA	INA	INA	INA
Potential comparative toxic unit for humans (cancer effects)	CTUh	INA	INA	INA	INA
Potential comparative toxic unit for humans (non-cancer effects)	CTUh	INA	INA	INA	INA
Potential soil quality index	dimensionless	INA	INA	INA	INA

Table 20. Life cycle assessment (LCA) results for specific product(double glazed with fire resistance) - the resource use (DU: 1 kg)

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Consumption of renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	3.59E+02	1.37E+00	6.56E+00	3.67E+02	3.97E-01	2.83E+00	5.20E-01	2.47E-01	3.89E-01	1.13E-01	-3.98E+00
Consumption of renewable primary energy resources used as raw materials	MJ	1.08E+03	0.00E+00	0.00E+00	1.08E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total consumption of renewable primary energy resources	MJ	1.44E+03	1.37E+00	6.56E+00	1.45E+03	3.97E-01	2.83E+00	5.20E-01	2.47E-01	3.89E-01	1.13E-01	-3.98E+00
Consumption of non-renewable primary energy - excluding renewable primary energy sources used as raw materials	MJ	2.07E+03	8.43E+01	1.08E+02	2.26E+03	2.31E+01	7.74E-01	7.59E+00	1.44E+01	4.55E+00	9.74E+00	-4.10E+01
Consumption of non-renewable primary energy resources used as raw materials	MJ	1.70E+01	0.00E+00	3.27E+01	4.97E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total consumption of non-renewable primary energy resources	MJ	2.08E+03	8.43E+01	1.41E+02	2.31E+03	2.31E+01	7.74E-01	7.59E+00	1.44E+01	4.55E+00	9.74E+00	-4.10E+01
Consumption of secondary materials	kg	8.50E+00	3.77E-02	1.27E-02	8.55E+00	1.07E-02	1.14E-03	5.79E-04	6.68E-03	2.34E-03	3.38E-03	-1.02E-01
Consumption of renew. secondary fuels	MJ	6.52E-02	4.94E-04	3.44E-05	6.57E-02	1.36E-04	4.98E-05	3.17E-06	8.45E-05	1.10E-04	6.02E-05	-1.50E-02
Consumption of non-renewable secondary fuels	MJ	3.35E-10	0.00E+00	0.00E+00	3.35E-10	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	m^3	1.37E+00	1.02E-02	7.05E-02	1.45E+00	3.11E-03	2.17E-03	2.33E-03	1.93E-03	3.50E-03	1.06E-02	-6.06E-01

Table 21. Life cycle assessment (LCA) results for specific product – waste categories (DU: 1 kg)

Indicator	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste	kg	1,10E+01	1,21E-01	8,06E-01	1,19E+01	3,37E-02	3,38E-03	1,48E-06	2,10E-02	1,57E-02	1,57E-02	-1,21E+00
Non-hazardous waste	kg	1,10E+02	2,59E+00	4,00E+01	1,52E+02	7,12E-01	1,49E-01	4,24E-02	4,44E-01	7,78E+00	1,83E-01	-3,57E+01
Radioactive waste	kg	9,30E+01	2,48E-05	1,19E-05	9,30E+01	7,45E-06	1,32E-06	6,16E-06	4,64E-06	2,82E-05	6,00E-05	-5,98E-04
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	0,00E+00	0,00E+00
Materials for recycling	kg	5,31E+00	1,01E-03	1,35E-02	5,32E+00	1,76E-04	5,25E-04	4,36E-05	1,09E-04	3,32E+00	5,48E-04	-2,90E+00
Materials for energy recovery	kg	4,54E-05	5,35E-06	1,20E-06	5,19E-05	1,49E-06	9,35E-08	6,09E-08	9,27E-07	1,82E-07	6,72E-07	-2,97E-05
Exported Energy	MJ	1,02E+01	3,69E-02	2,69E-02	1,03E+01	9,73E-03	7,75E-04	2,08E-02	6,06E-03	4,12E-02	2,28E-02	-8,62E-01

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: PhD. Eng. Halina Prejzner LCI audit and verification: Filip Poznański, M.Sc. Eng. LCA, LCI audit and input data verification: 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 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.

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 (ISO 17025/17065/17029). 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
- EN 15804:2012+A2:2019 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products
- EAA 2020 - Circular Aluminium Action Plan - A strategy for achieving aluminium's full potential for circular economy by 2030.
- European Life Cycle Database. ELCD 3.2. http://eplca.jrc.ec.europa.eu/ELCD3/index.xhtml?stock=default
- ISO 14067:2018 Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification
- CRU Group. Carbon footprint by cold metal by country - https://www.crugroup.com/about-cru/
- Ecoinvent Database. http://www.ecoinvent.org/database/.
- Life-Cycle inventory data for aluminium production and transformation processes in Europe. Environmental
- Profile Report. February 2018.
- Aluminium Recycling in LCA – European Aluminium Association

LCA, LCI audit and input data verification
Michał Piasecki, PhD. D.Sc. C.E. Eng.

/Qualified electronic signature/

Head of Thermal Physic, Acoustic and Environment Department
Agnieszka Winkler-Skalna, PhD. C.E. Eng.

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CERTIFICATE № 815/2025
of TYPE III ENVIRONMENTAL DECLARATION

Products:

Non-loadbearing walls and doors of ALUFIRE systems

Manufacturer:

ALUFIRE sp. z o.o.

Warszawska 64A, 87-148 Łysomice near Toruń, 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 22nd August 2025 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, August 2025