

## ENVIRONMENTAL PRODUCT DECLARATION

no. 01-11/2024




Loft ladders

**FAKRO PP Sp. z o.o**

*Declaration owner:* FAKRO PP Sp. z o.o.  
*Program owner:* Lukasiewicz Research Network – Institute of Ceramic and Building Material  
Environmental Engineering Center  
*Name of program* Environmental Product Declaration – B2B  
*Date of issue:* **14.11.2024**  
*Declaration valid until:* **14.11.2029**



**1. OVERVIEW**

<b>Product of declaration:</b>	Loft ladders <ul style="list-style-type: none"> <li>with wooden ladder,</li> <li>with metal ladder.</li> </ul>
<b>Program owner:</b> Łukasiewicz Research Network– Institute of Ceramics and Building Materials Environmental Engineering Center in Opole. <a href="http://www.icimb.pl/opole/">http://www.icimb.pl/opole/</a>	<b>Declaration owner:</b> FAKRO PP Sp. z o.o. Węgierska 144a 33-300 Nowy Sącz Telefon: +48 18 444-0-444 Fax: +48 18 444-0-333 Adres: e-mail: fakro@fakro.pl <a href="https://www.fakro.pl/">https://www.fakro.pl/</a>
<b>Declared unit:</b>	1 piece (dimension 70x120 cm)
<b>Date of issue:</b>	14.11.2024
<b>Declaration valid until:</b>	14.11.2029
<b>Life Cycle Analysis (LCA):</b>	A1-A3, C1-C4 and D according to PN-EN 15804+A2 (Cradle-to-Gate with options)
<b>Product Categorization (PCR) Rules</b>	PN-EN 15804+A2:2020-03 Sustainability of construction works. Environmental Product Declarations. Basic principles of categorization of construction products, ICIMB-PCR A
<b>Representatives:</b>	Polish product, year 2023
<b>Declared durability:</b>	30 years
<b>Reasons for performing LCA:</b>	B2B
<b>Standardy produktu</b>	EN 14975
<b>Declarations that are the result of different programs or are not performed in accordance with the standard may not be comparable.</b>	
The Łukasiewicz – Institute of Ceramics and Building Materials Environmental Engineering Center provides access to the Type III environmental declaration for loft ladders to interested parties.	
<b>The declaration owner is responsible for the information and the base evidence. Łukasiewicz Research Network - Institute of Ceramics and Building Materials Center for Environmental Engineering is not responsible for the manufacturer's information and data and evidence regarding the life cycle assessment.</b>	
<b>Authors' team:</b> Katarzyna Kiprian, M.Sc. Ewa Głodek-Bucyk, Ph.D. Patrik Okoń, M.Sc. <b>Approved:</b>  Joanna Poluszyńska, PhD Director of the Environmental Engineering Center  Ewa Głodek-Bucyk, Ph.D. Leader of the Process Engineering Research Group	<b>Review:</b> CEN standard PN-EN 15804+A2 serves as the main PCR document. Independent verification of declarations and data according to EN ISO 14025:2010  <input type="checkbox"/> Internal <input checked="" type="checkbox"/> External    Katarzyna Grzesik, PhD, DSc

## 2. MANUFACTURE AND PRODUCT INFORMATION

FAKRO Group is an international company operating in the construction industry since 1991. The FAKRO Group, which employs over 4000 people, consists of 11 production companies and 17 distribution companies. FAKRO's offer includes primarily:

- Wooden and aluminium-plastic roof windows with various designs and opening methods. In addition to roof windows, the product offer includes, flat roof windows,
- Flanges, electrical control, loft ladders, hatches, tubular skylights, smoke extraction,
- Accessories for roof windows: blinds, curtains, internal and external roller shutters, external awnings, mounting accessories, films and membranes.

The company's headquarters are located in Nowy Sącz, where FAKRO has over 230,000 m<sup>2</sup> of production, warehouse and office space at its disposal. The environmental impact of purchased products is increasingly important for both consumers and manufacturers. Therefore, the production process at FAKRO is subject to numerous assessments, which has been confirmed by numerous certificates awarded to FAKRO. The loft ladder is certified by FIRES and Passive House Institute and certified for wood – FSC.

Attic stairs allow easy and safe access to an unusable attic without the need to make expensive and space-consuming stationary stairs. They meet all technical and safety requirements, and provide full comfort of use.

When folding and unfolding, they do not require much space, and after folding they "hide" in the ceiling. This saves space in the room where they are installed. The appropriate design of the mechanism relieving the flap of the stairs, and in some models also the ladder, improves their operation. The rod supplied with the stairs allows convenient opening and closing of the stairs, which are delivered to the customer completely assembled and do not require any pre-assembly activities. In order to speed up the installation of the stairs and increase the comfort of their use, a wide range of additional accessories is available.

FAKRO offers various models of loft ladders that allow you to meet the individual needs of customers. All models of folding stairs provide high tightness and thermal insulation. They can be divided according to the type of ladder:

- Stairs with wooden ladder (m.in. LW\_, LTK Energy, LDK),
- Stairs with metal ladder (m.in. LM\_, LS\_, LET Electric).

In addition, out of concern for the environment, a new generation of GREENSTEP loft ladders has been created, which combines the highest functional standards, aesthetic workmanship, and excellent thermal insulation parameters. It is a perfect combination of comfort, aesthetics and ecology. Based on nearly twenty years of experience in the production of stairs, we have managed to create a unique product that meets the highest quality standards and is in line with the philosophy of FAKRO GO GREEN.

**PRODUCT DESCRIPTION AND APPLICATION**

EPD includes loft ladders:

- /// with wooden ladder (m.in. LW\_, LTK Energy, LDK)
- /// with metal ladder (m.in. LM\_, LS\_, LET Electric)

Loft ladders with wooden ladders are made of:

- /// Wood – the basic material,
- /// Steel – frame elements, handrail and fittings,
- /// HDF – part of the flap,
- /// Plastics (TPS, PA, PE, POM, PP) – additional elements,
- /// EPS – an insulating material used in the label.

The production of stairs with wooden ladders begins with the removal of materials from the warehouse, which are then sent to the appropriate departments dealing with the processing of components. Wooden elements and stair slabs are processed. Identification and operational materials are also being prepared. The manufactured components go to the assembly line, where they are connected to each other according to the specifications of individual models. The finished product is packed and secured for transport, and then directed to the finished products warehouse.

The production of loft ladders with a wooden ladder is carried out according to the scheme (Fig. 1).

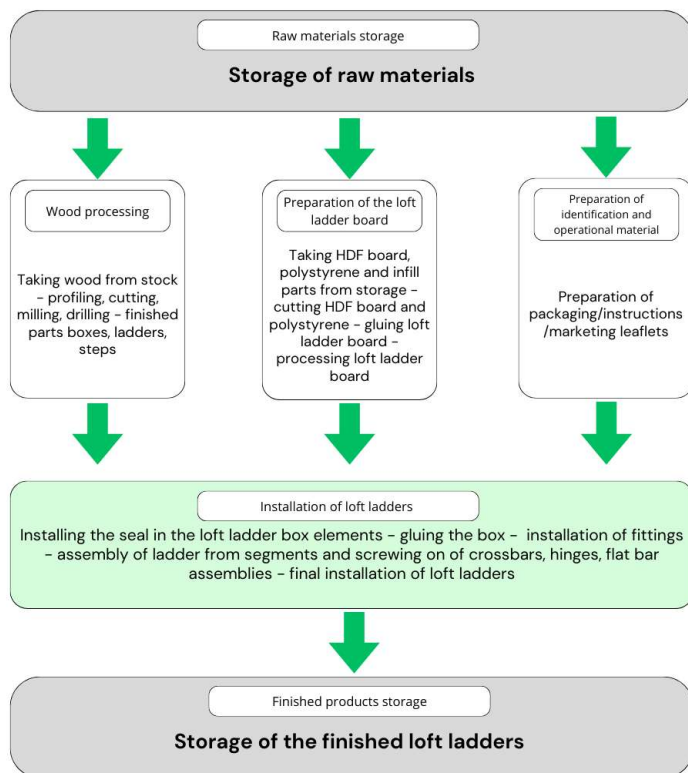


Figure 1. Production process of stairs with wooden ladder manufactured by Fakro PP Sp. z o.o. and Stolart Sp. z o.o..

Loft ladders with metal ladder are made of:

- /// Steel – basic material – frame elements, ladder, handrail and fittings,
- /// Wood – staircase frame and hatches,
- /// HDF – part of the flap,
- /// Plastics (TPS, PA, PE, POM, PP, PVC) – additional elements,
- /// EPS – an insulating material used in the lapel.

The production of a metal ladder staircase begins with the collection of materials from the warehouse, which are then sent to the appropriate departments dealing with the processing of components. Elements of boxes, flaps and scissor ladders are processed. Fittings, identification and operating materials are also being prepared. The manufactured components are sent to the assembly line, where they are connected to each other according to the specifications of individual models. The finished product is packed and secured for transport, and then directed to the finished products warehouse.

The production of loft ladders with a metal ladder is carried out according to the diagram (Fig. 2).

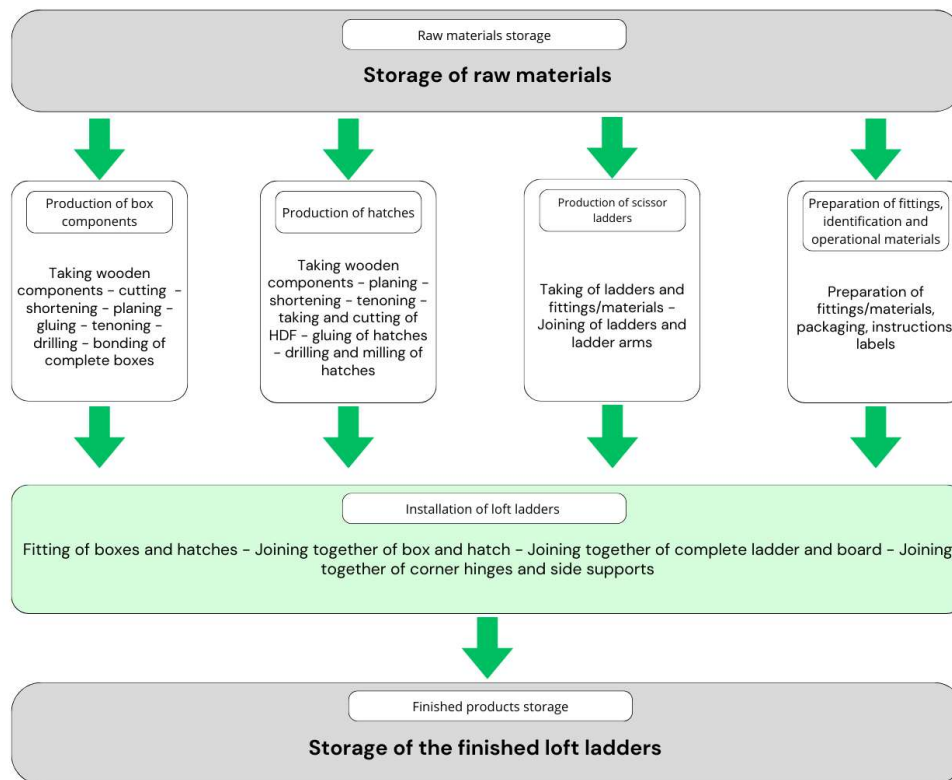


Figure 2. Production process of stairs with metal ladders manufactured by Fakro PP Sp. z o.o. and Stolart Sp. z o.o..

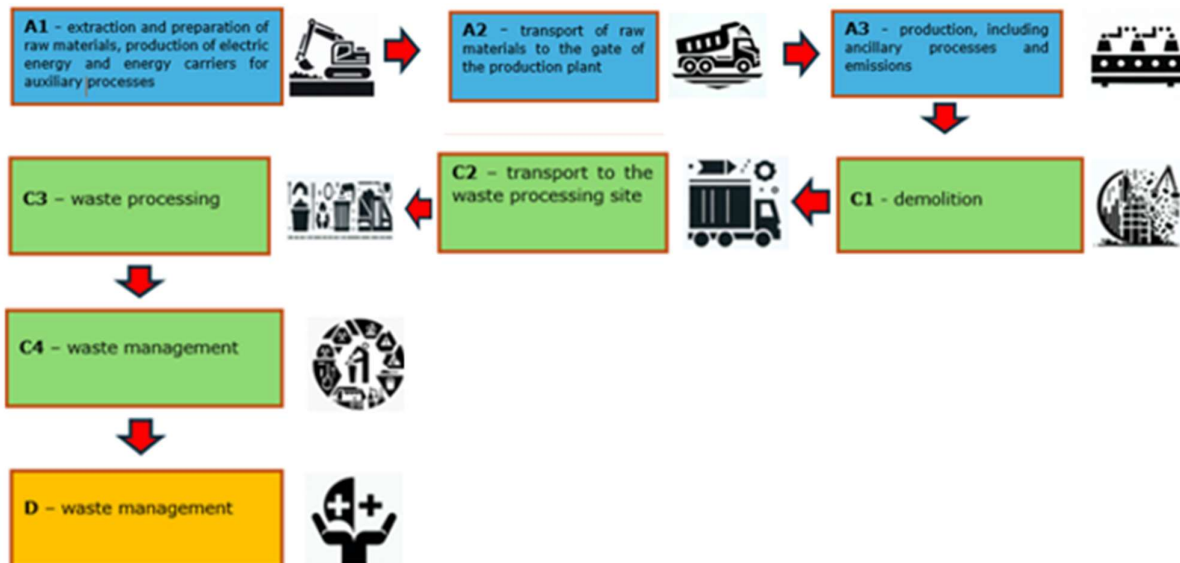
### 3. LCA: CALCULATION RULES

The environmental declaration is based on average data provided by the owner of the declaration Fakro PP Sp. z o.o. for two production plants located in:

- Fakro PP Sp. z o.o. 144a Węgierska Street, 33-300 Nowy Sącz,
- Stolart Sp. z o.o. Dobra 156, 34-642 Dobra

#### System limitations

The life cycle analysis of the tested products includes modules A1-A3, C1-C4 and D (Cradle to Gate with options) in accordance with EN 15804.



#### Data collection period

Data on the production process were provided in 2024 for the period 01.01.2023 - 31.12.2023 (12 months) and correspond to the production technology of the time.

#### Declared unit

**1 piece** (dimension 70x120 cm)

#### Assumptions

**A1** – extraction and consumption of raw materials refers to specific mass shares in the production process, per unit declared of the product,  
**A2** – distances from the place of obtaining raw materials to the production plant individual for each raw material, means of transport differentiated due to the method of delivery of raw materials,  
**A3** – CO<sub>2</sub>, NO<sub>x</sub>, SO<sub>2</sub> and dust emission values from the production process received from the manufacturer,  
**C1** - describes how to deal with the loft ladder during disassembly/demolition. The calculations are performed on the basis of the developed scenario.  
**C2** – refers to the transport of construction waste to a recovery or disposal plant. The calculations are performed on the basis of the developed scenario.  
**C3** – takes into account the environmental impact during the processing of demolition waste, including elements of loft ladders, in a waste recovery plant. The

calculations are performed on the basis of the developed scenario.

**C4** – takes into account the environmental impact of storage and recycling of loft ladder elements. The calculations are performed on the basis of the developed scenario.

**D** – refers to the impact and effects of the use of secondary material. The calculations are performed based on the developed scenario.

**Cut-off-criteria**

99% of all bulk streams involved in the production process were taken into account. All the energy used in the process was taken into account in the environmental declaration.

**General data**

The data for the calculations come from Ecoinvent v. 3.9.2 and have been supplemented with KOBiZE *CO<sub>2</sub>, SO<sub>2</sub>, NO<sub>2</sub>, CO and total particulate matter emission indicators for electricity, December 2023*.

Emission factors for electricity were determined using the actual KOBiZE data. The Polish electricity emission factor (Ecoinvent supplemented with current national data from KOBiZE) is 0.685 kg CO<sub>2</sub>/kWh. A detailed analysis of data quality was part of an external audit.

**Allocation**

All data on components manufactured in two plants were provided by the owner of the declaration, Fakro PP Sp. z o.o., and were referred to the declared unit of the product – 1 piece of loft ladder with dimensions of 70x120 cm. The allocation rules used in this EPD are based on the general ICIMB-PCR A principles.

#### 4. LCA: SCENARIUSZE I DODATKOWE INFORMACJE TECHNICZNE

The life cycle assessment has been developed in accordance with the requirements of PN-EN ISO 15804+A2:2020, PN-EN ISO 14025 and PN-EN ISO 14040. The rules for product categorization have been adopted in accordance with the PN-EN 15804 standard.

For the life cycle analysis of products covered by the environmental statement in the field of "cradle to gate with options", scenarios for modules C1-C4 and D have been developed:

**Module C1 - Demolition/Demolition** – Manual demolition and initial sorting on site have been adopted. The consumption of energy and other raw materials in this module has been omitted due to negligible values. The separated fractions from the loft ladder separation are directed to the waste treatment plant. The modulus is zero.

**Module C2 – Transport** – Waste is transported to the treatment plant, where, after separating the recyclable fraction, the fraction intended for incineration, and the fraction intended for storage, the appropriate quantities are directed to further processes.

- Transport is carried out by trucks with a load capacity of 16-32 tons, meeting the EURO 6 emission standards.
- Transport to the recycling plant and to the landfill takes place at a distance of 50 km from the demolition site. The car is driving empty one way.
- Transport to the incineration plant takes place over a distance of 50 km. The car is driving empty one way.

**Module C3 - Waste treatment** - It is assumed that all waste goes to the waste treatment plant. Electricity consumption per 1 kg of waste is 0.03 kWh/kg, and fuel consumption is 0.315 MJ/kg. The following processes were assumed for the calculations: unloading (loader), crushing (crusher.)

**Module C4 – Waste management** – It has been assumed that waste that can no longer be used in any other way is sent to the landfill. These are wastes separated in the processing process (module C3).

**Module D - Material reuse potential** - the benefits of thermal waste treatment and the recovery of some raw materials used in the production of loft ladders are taken into account here



**5. LCA: RESULTS**

The table below shows the LCA modules taken into account in the calculation of the environmental impact categories for the products covered by the declaration.

<b>DESCRIPTION OF SYSTEM BOUNDARIES (X – INCLUDED IN LCA, MND – UNDECLARED MODULE)</b>																
Production stage			Construction phase		Stage of use							End of life stage				Benefits and flows beyond the system boundaries
Mining & Sourcing in raw materials	Transport	Production	Transport	Construction Process	Usufruct	Maintenance	Repair	Exchange	Renovation	Energy consumption	Water consumption	Demolition	Transport	Waste Treatment	Waste management	Potential for reuse
<b>A1</b>	<b>A2</b>	<b>A3</b>	<b>A4</b>	<b>A5</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>B4</b>	<b>B5</b>	<b>B6</b>	<b>B7</b>	<b>C1</b>	<b>C2</b>	<b>C3</b>	<b>C4</b>	<b>D</b>
<b>X</b>	<b>X</b>	<b>X</b>	<b>MND</b>	<b>MND</b>	<b>MND</b>	<b>MND</b>	<b>MND</b>	<b>MND</b>	<b>MND</b>	<b>MND</b>	<b>MND</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>

The following tables present the results of the LCA analysis for loft ladders. Explanations of the abbreviations used to describe the impact category are provided below:

- GWP-total** Global warming potential
- GWP-fossil** Global warming potential fossil fuel
- GWP-biogenic** Global warming potential biogenic
- GWP-luluc** Global warming potential land use and land change
- ODP** Depletion potential of the stratospheric ozone layer
- AP** Acidification potential of land and water
- EP-freshwater** Eutrophication potential, fraction of nutrients reaching freshwater end compartment
- EP-marine** Eutrophication potential, fraction of nutrients reaching marine end compartment
- EP-terrestrial** Eutrophication potential, Accumulated Exceedance
- POCP** Formation potential of tropospheric ozone photochemical oxidants
- ADP-minerals&metals** Abiotic depletion potential for nonfossil resources
- ADP-fossil** Abiotic depletion potential for fossil resources
- WDP** Water (user) deprivation potential
- PM** Potential incidence of disease due to PM emissions
- IRP** Potential Human exposure efficiency relative to U235
- ETP-fw** Potential comparative Toxic Unit for ecosystems
- HTP-c** Potential comparative Toxic Unit for humans (cancerogenic)
- HTP-nc** Potential comparative Toxic Unit for humans (non-cancerogenic)
- SQP** Potential soil quality index
- 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 resources 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**  
**RSF**  
**NRSF**  
**FW**

Use of secondary material  
Use of renewable fuels  
Use of non-renewable secondary fuels  
Use of net fresh water

<b>MAIN IMPACT INDICATORS: 1 piece of loft ladders with wooden ladder (dimension 70x120 cm)</b>									
Life cycle stage									
Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
GWP-total	kg CO <sub>2</sub> eq.	-1,40E+01	2,35E+00	5,06E+00	0,00E+00	4,90E-01	1,44E+00	8,73E-03	-1,84E+01
GWP-fossil	kg CO <sub>2</sub> eq.	1,55E+01	2,35E+00	8,24E+00	0,00E+00	4,89E-01	1,41E+00	8,71E-03	-1,52E+00
GWP-biogenic	kg CO <sub>2</sub> eq.	-2,95E+01	3,41E-03	-3,20E+00	0,00E+00	3,39E-04	2,79E-02	2,31E-05	-1,69E+01
GWP-luluc	kg CO <sub>2</sub> eq.	1,27E-02	1,05E-03	1,27E-02	0,00E+00	1,62E-04	6,37E-04	9,07E-07	3,90E-03
ODP	kg CFC11 eq.	1,98E-07	4,60E-08	4,14E-08	0,00E+00	9,73E-09	1,32E-08	1,34E-10	2,71E-08
AP	mol H <sup>+</sup> eq.	5,46E-02	9,00E-03	4,31E-02	0,00E+00	1,02E-03	1,01E-02	7,71E-05	-2,81E-02
EP-freshwater	kg PO <sub>4</sub> eq.	6,20E-03	2,58E-04	9,75E-03	0,00E+00	3,31E-05	7,94E-04	2,57E-07	-1,89E-03
EP-marine	kg N eq.	1,22E-02	2,85E-03	9,66E-03	0,00E+00	2,45E-04	3,89E-03	3,57E-05	2,04E-03
EP-terrestrial	mol N eq.	1,29E-01	3,13E-02	8,37E-02	0,00E+00	2,64E-03	4,10E-02	3,90E-04	3,04E-02
POCP	kg NMVOC eq.	5,62E-02	1,35E-02	2,34E-02	0,00E+00	1,69E-03	1,21E-02	1,17E-04	-5,25E-04
ADP-minerals & metals	kg Sb eq.	3,20E-05	1,58E-05	9,61E-06	0,00E+00	1,59E-06	8,64E-07	3,57E-09	5,66E-06
ADP-fossil	MJ	2,38E+02	3,30E+01	9,13E+01	0,00E+00	6,88E+00	1,71E+01	1,14E-01	8,06E+00
WDP	WDP (m <sup>3</sup> ) world ekw	4,83E+00	1,60E-01	2,78E-01	0,00E+00	2,86E-02	5,25E-02	2,46E-04	1,83E+00
<b>ADDITIONAL IMPACT INDICATORS: 1 piece of loft ladders with wooden ladder (dimension 70x120 cm)</b>									
Life cycle stage									
Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
PM	Disease incidence	1,52E-03	3,63E-04	3,19E-04	0,00E+00	6,05E-05	3,59E-04	3,74E-06	4,52E-05
IRP	kBq U235 eq.	1,03E+00	7,67E-02	1,23E-01	0,00E+00	8,92E-03	9,78E-03	6,28E-05	2,80E-01
ETP-fw	CTUe	3,86E-03	1,61E-04	6,07E-03	0,00E+00	2,06E-05	4,94E-04	1,60E-07	-1,17E-03
HTP-c	CTUh	2,90E-06	1,47E-08	1,37E-08	0,00E+00	3,47E-09	3,71E-09	3,36E-11	-7,51E-07
HTP-nc	CTUh	7,39E-08	2,05E-08	1,11E-07	0,00E+00	4,32E-09	8,96E-09	1,54E-11	-5,08E-08
SQP	-	2,86E+02	1,54E+01	1,26E+02	0,00E+00	4,16E+00	1,84E+00	1,40E-01	1,75E+02

**INDICATORS DESCRIPTIONS RESOURCE CONSUMPTION: 1 piece of loft ladders with wooden ladder (dimension 70x120 cm)**

Life cycle stage									
Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
PERE	MJ	5,71E+01	9,18E-01	3,26E+01	0,00E+00	1,18E-01	6,48E-01	3,40E-03	3,24E+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
PERT	MJ	5,71E+01	9,18E-01	3,26E+01	0,00E+00	1,18E-01	6,48E-01	3,40E-03	3,24E+01
PEN-RE	MJ	2,56E+02	3,37E+01	1,16E+02	0,00E+00	6,13E-01	1,96E+01	1,19E-01	-3,69E+00
RE	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
PENRT	MJ	2,56E+02	3,37E+01	1,16E+02	0,00E+00	6,13E-01	1,96E+01	1,19E-01	-3,69E+00
SM	kg	0,00E+00	0,00E+00	1,47E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	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
NRSF	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
FW	m <sup>3</sup>	2,06E-01	1,35E-02	1,72E-01	0,00E+00	1,25E-03	1,29E-02	4,62E-06	1,73E-02

**INDICATORS DESCRIBING OUTPUT STREAMS AND WASTE: 1 piece of lof ladders with wooden ladder (dimension 70x120 cm)**

Life cycle stage									
Indicator	Unit (referenced to DU)	A1	A2	A3	C1	C2	C3	C4	D
Amount of hazardous waste	kg	WN	WN	1,17E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of non-hazardous waste	kg	WN	WN	1,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of radioactive waste	kg	WN	WN	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Reusable components	kg	WN	WN	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Recyclable materials	kg	WN	WN	1,47E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Energy Recovery Materials	kg	WN	WN	7,11E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported Energy	MJ/energy carrier	WN	WN	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,63E+01

**BIOGENIC CARBON**

**Biogenic carbon content in the product (kg C<sub>org</sub>)** **6,79E+00**

**Biogenic carbon content per package (kg C<sub>org</sub>)** **8,68E-01**

**MAIN IMPACT INDICATORS: 1 piece of loft ladders with metal ladder  
(dimension 70x120 cm)**

Life cycle stage									
Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
GWP-total	kg CO <sub>2</sub> eq.	3,44E+01	4,17E+00	6,25E+00	0,00E+00	7,46E-01	2,19E+00	1,85E-02	-3,63E+01
GWP-fossil	kg CO <sub>2</sub> eq.	5,32E+01	4,17E+00	8,34E+00	0,00E+00	7,45E-01	2,15E+00	1,85E-02	-4,63E+01
GWP-biogenic	kg CO <sub>2</sub> eq.	-1,89E+01	4,94E-03	-2,11E+00	0,00E+00	5,16E-04	4,25E-02	4,90E-05	9,97E+00
GWP-luluc	kg CO <sub>2</sub> eq.	1,99E-02	1,70E-03	1,43E-02	0,00E+00	2,47E-04	9,69E-04	1,92E-06	-1,55E-02
ODP	kg CFC11 eq.	4,57E-07	8,21E-08	5,40E-08	0,00E+00	1,48E-08	2,01E-08	2,85E-10	-2,05E-07
AP	mol H <sup>+</sup> eq.	1,83E-01	1,34E-02	4,40E-02	0,00E+00	1,55E-03	1,53E-02	1,64E-04	-1,74E-01
EP-freshwater	kg PO <sub>4</sub> eq.	2,33E-02	3,96E-04	9,41E-03	0,00E+00	5,05E-05	1,21E-03	5,46E-07	-2,22E-02
EP-marine	kg N eq.	4,36E-02	4,01E-03	1,04E-02	0,00E+00	3,73E-04	5,92E-03	7,56E-05	-3,63E-02
EP-terrestrial	mol N eq.	4,65E-01	4,38E-02	8,70E-02	0,00E+00	4,02E-03	6,24E-02	8,28E-04	-3,84E-01
POCP	kg NMVOC eq.	1,66E-01	2,06E-02	2,53E-02	0,00E+00	2,58E-03	1,85E-02	2,48E-04	-1,43E-01
ADP-minerals & metals	kg Sb eq.	6,57E-05	2,29E-05	1,19E-05	0,00E+00	2,42E-06	1,32E-06	7,57E-09	-3,75E-05
ADP-fossil	MJ	5,79E+02	5,86E+01	9,25E+01	0,00E+00	1,05E+01	2,60E+01	2,42E-01	-4,64E+02
WDP	WDP (m <sup>3</sup> ) world ekw	1,23E+01	2,70E-01	1,92E-01	0,00E+00	4,35E-02	8,00E-02	5,23E-04	-8,87E+00

**ADDITIONAL IMPACT INDICATORS: 1 piece of loft ladders with metal ladder  
(dimension 70x120 cm)**

Life cycle stage									
Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
PM	Disease incidence	5,94E-03	5,99E-04	4,30E-04	0,00E+00	9,21E-05	5,46E-04	7,94E-06	-5,18E-03
IRP	kBq U235 eq.	1,86E+00	1,15E-01	1,47E-01	0,00E+00	1,36E-02	1,49E-02	1,33E-04	-1,17E+00
ETP-fw	CTUe	1,45E-02	2,47E-04	5,85E-03	0,00E+00	3,14E-05	7,52E-04	3,40E-07	-1,38E-02
HTP-c	CTUh	1,35E-05	2,73E-08	4,52E-08	0,00E+00	5,29E-09	5,65E-09	7,12E-11	-1,27E-05
HTP-nc	CTUh	2,20E-07	3,66E-08	1,10E-07	0,00E+00	6,58E-09	1,36E-08	3,26E-11	-2,24E-07
SQP	-	2,71E+02	3,02E+01	1,61E+02	0,00E+00	6,33E+00	2,81E+00	2,98E-01	-1,80E+02

**INDICATORS DESCRIPTIONS RESOURCE CONSUMPTION: 1 piece of loft ladders  
with metal ladder (dimension 70x120 cm)**

Life cycle stage									
Indicator	Unit	A1	A2	A3	C1	C2	C3	C4	D
PERE	MJ	5,14E+01	1,41E+00	3,87E+01	0,00E+00	1,80E-01	9,87E-01	7,20E-03	-3,25E+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
PERT	MJ	5,14E+01	1,41E+00	3,87E+01	0,00E+00	1,80E-01	9,87E-01	7,20E-03	-3,25E+01
PEN-RE	MJ	7,00E+02	6,02E+01	1,17E+02	0,00E+00	9,33E-01	2,98E+01	2,51E-01	-5,95E+02
RE	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
PENRT	MJ	7,00E+02	6,02E+01	1,17E+02	0,00E+00	9,33E-01	2,98E+01	2,51E-01	-5,95E+02
SM	kg	0,00E+00	0,00E+00	2,78E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	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
NRSF	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
FW	m <sup>3</sup>	3,42E-01	1,93E-02	1,73E-01	0,00E+00	1,91E-03	1,96E-02	9,79E-06	-2,57E-01

<b>INDICATORS DESCRIBING OUTPUT STREAMS AND WASTE: 1 piece of loft ladders with metal ladder (dimension 70x120 cm)</b>									
Indicator	Unit (referenced to DU)	Life cycle stage							
		A1	A2	A3	C1	C2	C3	C4	D
Amount of hazardous waste	kg	WN	WN	1,41E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of non-hazardous waste	kg	WN	WN	1,35E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of radioactive waste	kg	WN	WN	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Reusable components	kg	WN	WN	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Recyclable materials	kg	WN	WN	2,78E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Energy Recovery Materials	kg	WN	WN	4,52E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported Energy	MJ/energy carrier	WN	WN	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,51E+01

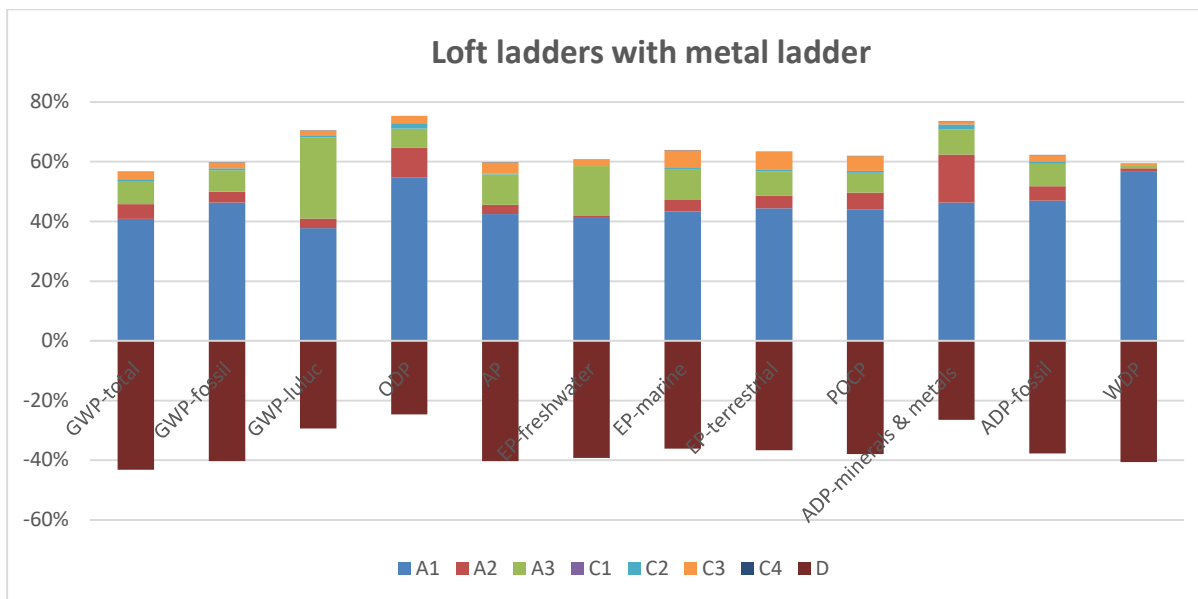
<b>BIOGENIC CARBON</b>	
<b>Biogenic carbon content in the product (kg C<sub>org</sub>)</b>	<b>4,28E+00</b>
<b>Biogenic carbon content per package (kg C<sub>org</sub>)</b>	<b>7,60E-01</b>

**6. INTERPRETATION OF RESULTS**

Figures 3 and 4 show the diagram of the contributions of individual life cycle modules to the basic categories of impact of loft ladders with wooden ladder and with a metal ladder:



**Figure 3** Shares of life cycle modules on the main categories of influence – loft ladders with wooden ladder.



**Figure 4** Shares of life cycle modules on the main categories of influence – loft ladders with metal ladder

**LITERATURE**

- ✓ ICIMB-PCR A. General Product Category Rules for Construction Products.
- ✓ PN-EN 15804+A2:2020, Sustainability of building structures -- Environmental product declarations -Basic principles of categorization of construction products.
- ✓ PN-EN ISO 14025:2014-04, Environmental labels and declarations -- Type III environmental declarations -- Rules and procedures.
- ✓ PN-EN ISO 14040:2009 Environmental management. Life Cycle Assessment. Principles and structure.
- ✓ PN-EN ISO 14044:2009, Environmental management. Life Cycle Assessment. Requirements and guidelines.
- ✓ ISO 21930:2017 - Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services
- ✓ PN-EN 15942:2012 Sustainability of construction works – Environmental product declarations – Communication format business-to-business.
- ✓ KOBiZE CO<sub>2</sub>, SO<sub>2</sub>, NO<sub>x</sub>, CO and total particulate matter emission factors for electricity, December 2023.
- ✓ SK CERTIFICATE of constancy of performance of essential characteristics of product SK01-ZSV-0387,
- ✓ The Act of 14 December 2012 on Waste, Journal of Laws. 2013, item 21.
- ✓ Act of 27 April 2001. Environmental Protection Law Journal of Laws 2024.54, consolidated text.
- ✓ Data from the company's website: <https://www.fakro.pl/>.

Explanatory material can be obtained by contacting the representative directly FAKRO PP Sp. z o.o.