ENVIRONMENTAL PRODUCT DECLARATION
No. 03-07/2024

Thermal insulation system LOBATHERM S

Declaration owner:	***Sievert Polska Sp. z o.o.***
Program Owner:	*Łukasiewicz Institute of Ceramics and Building Materials Centre for Environmental Engineering*
Program Name	*Environmental Product Declarations – B2B*
Release Date:	***12.07.2024***
Declaration valid until:	***12.07.2024***

1. OVERVIEW

Declaration owner: Sievert Polska Sp. z o.o.	**Products covered by the declaration:** Thermal insulation system (ETICS) LOBATHERM S
Program Owner: Łukasiewicz Institute of Ceramics and Building Materials, Centre for Environmental Engineering in Opole. **http://www.icimb.pl/opole/**	**Declaration owner:** Sievert Polska Sp. z o.o. Nyska 36 str 57-100 Strzelin Telephone: +48 713927220 e-mail: info@sievert.pl **https://www.sievert.pl/**
Date of issue: 12.07.2024	**Declared Unit:** 1 m^2 of thermal insulation system LOBATHERM S The calculations were made for an insulating layer of expanded polystyrene with a thickness of 150 mm
Declaration valid until: 12.07.2029	**Scope:** The declaration covers the following products: thermal insulation system LOBATHERM S manufactured in the plants of Sievert Polska Sp. z o.o. 36 Nyska str 57-100 Strzelin and Sievert Polska Sp. z o.o. 14 Opoczyńska str, 96-200 Rawa Mazowiecka It contains information on the environmental impact of the declared products. All data on the production cycle were collected by Sievert Polska Sp. z o.o. from 01.01.2022 to 31.12.2022 (12months) and correspond to the production technology of the time These are averaged data for the total production of components used in the LOBATHERM S insulation system manufactured at the Sievert Polska Sp. z o.o. plant. Strzelin Plant at 36 Nyska Str and Rawa Mazowiecka at 14 Opoczyńska Str. 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. The declaration owner is responsible for the information and the base evidence. The Łukasiewicz Research Network - Institute of Ceramics and Building Materials Center for Environmental Engineering in Opole is not responsible for the manufacturer's information and data and evidence regarding the life cycle assessment. Claims resulting from different programs or executed contrary to the standard may not be comparable.
Product Categorization (PCR) Rules	PN-EN 15804+A2:2020-03 Sustainability of construction works. Environmental Product Declarations. Basic Principles of Categorization of Construction Products, ICIMB-PCR A.

Łukasiewicz
Instytut Ceramiki
i Materiałów Budowlanych

ENVIRONMENTAL PRODUCT DECLARATION
No. 03-07/2024

sievert

Representativeness:	Polish product, year 2022
Declared durability:	50 years
Reasons for performing LCA:	B2B
Life Cycle Analysis (LCA):	A1-A3, A4, A5, C1-C4 and D (Cradle-to-Gate with options)

The Łukasiewicz Research Network Institute of Ceramics and Building Materials Centre for Environmental Engineering provides access to the Type III Environmental Declaration for Complete Thermal Insulation Systems (ETICS) of Sievert Polska Sp. z o.o. to interested parties.

Authors' team:

Katarzyna Kiprian, M.Sc.
Ewa Głodek-Bucyk, Ph.D.
Patryk Okoń, M.Sc.

Approved:
Joanna Poluszyńska, PhD

Director of Environmental Engineering Center

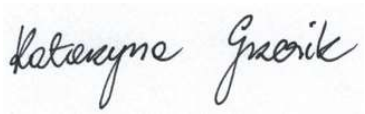
Ewa Głodek-Bucyk, Ph.D.

Leader of the Process Engineering Research Group

Review:

CEN standard PN-EN 15804+A2 serves as the main PCR document.
Independent verification of declarations and data according to EN ISO 14025:2010

☐ Internal ☒ External



Katarzyna Grzesik, PhD, DSc

2. INFORMATION OF OWNER AND PRODUCT

Sievert Polska Sp. z o.o. is a dynamically developing company that has been operating in Poland for 1997 years. It is a manufacturer of building materials with a long tradition. The most important product brands, present on the Polish market for many years, are:

1. **Quick-Mix** – a brand responsible for thermal insulation systems, clinker mortar systems, a wide range of dry construction mortars, tile adhesives, concrete, floors and others,
- **Tubag** – a brand with a rich tradition and success in the development of technologies
  and solutions for the renovation and protection of historic buildings.

Products of **Sievert Polska Sp. z o.o.** They are dedicated to professionals for whom high quality products are important.

Insulation is an important element of building a house. A properly selected insulation system is a guarantee of energy savings**.** Properly performed insulation of external walls reduces the building's energy demand, reduces the operating costs of the building, contributes to the improvement of the microclimate and thermal comfort of rooms, significantly affects the aesthetics and durability of the façade. Insulating buildings also affects the protection of the natural environment by reducing CO_2 emissions. on the market of thermal insulation systems guarantees high quality, durability, reliability as well as customer satisfaction.

Specyfication of thermal insulation system

The group of products covered by the declaration is:
- Thermal insulation system LOBATHERM S

The LOBATHERM S thermal insulation system includes products manufactured in the plants of Sievert Polska Sp. z o.o. in Strzelin and in Rawa Mazowiecka, such as adhesive mortars, plaster coatings, primers and paint coatings. Other materials such as insulation material (EPS), fiberglass mesh and mechanical fasteners are manufactured by other manufacturers.

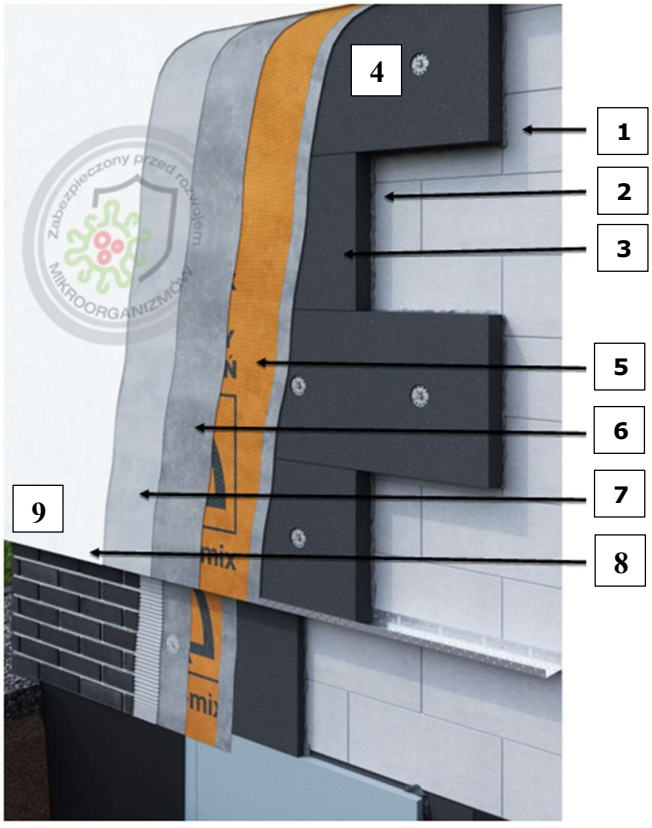
The composition of the LOBATHERM S thermal insulation system product set is presented in Table 1. Visualization of LOBATHERM S thermal insulation systems is shown in Figure 1.

Table 1. Components of the LOBATHERM S thermal insulation system.

	Products included in the set	Consumption [kg/m²]	Thickness [mm]
Methods of fixing the product to thermal insulation	**Adhesive mortar system:** polystyrene boards fixed to the substrate with adhesive mortar, gluing area not less than 40% **Adhesive mortar system, with additional mechanical fixing:** polystyrene boards fixed to the substrate with adhesive mortar, with additional mechanical fixing, gluing area not less than 40%		
Thermal insulation product	**Polystyrene (EPS) boards:** white or graphite boards with smooth or milled edges, without chipping	-	20 ÷ 300
Adhesive mortars	**Z-102** dry mixture, which must be mixed with water in a weight ratio of 100:20 before application	4,0÷6,0	-

	S-102 dry mixture, which must be mixed with water in a weight ratio of 100:23 before application		
Mechanical fasteners	**Adhesive system with additional mechanical fastening:** fasteners for fixing thermal insulation, placed on the market in accordance with current regulations and intended use	-	-
Fiberglass Mesh	**QMS 160** weave: Gazean length: 50 m used in one or optionally two layers	-	-
Mortar for making a reinforcing layer	**S-102** dry mixture, which must be mixed with water in a weight ratio of 100:23 before application	4,0÷5,0	3,0÷5,0
Plaster Primer	**GTA** preparation for priming the reinforced layer for plastering, supplied in a ready-to-use form	ok. 0,35 (l/m^2)	
Plaster mortar	**Mineral plaster mortars:** **MRS/MR –** dry mixture, which should be mixed with water in the weight ratio of 100 : 22 before application, "woodworm" structure, grain size: 2.0; 3.0 mm **SPS/SP -** dry mixture, which should be mixed with water in the weight ratio of 100 : 22 "lamb" structure, grain size: 2.0; 3.0 mm **SQS** – dry mixture, which should be mixed with water in the weight ratio of 100 :28 before application, "lamb" structure, earth effect: 1.5; 2.0 mm **HYDROCON HSS/HCS HYDROCON** - dry mixture, which should be mixed with water in the weight ratio of 100 :(20 ÷23) "lamb" structure before application, soil penetration: 2.0; 3.0 mm **HYDROCON HRS/HCR HYDROCON** - dry mixture, which should be mixed with water in the weight ratio 100 : (20 ÷ 23) "woodworm" structure grain size: 2.0; 3.0 mm **HYDROCON HFS/HCF HYDROCON** - dry mixture, which should be mixed with water in a weight ratio of 100 : (20 ÷ 23) "fine-grained" structure before application grain size: 1.0mm	1,9÷4,5	Depending on the grain size
	Silicone plastering compounds: **SHK** supplied ready-to-use "lamb" structure grain size: 1.5, 2.0, 3.0 mm **SHR** supplied as a ready-to-use "woodworm" structure, grain size: 2.0 - 3.0 mm	1,9÷4,5	Depending on the grain size
	Siloxane plaster compounds: **SXK SISI -** supplied ready-to-use "lamb" structure, earth effect: 1.0, 1.5, 2.0, 3.0 mm **SXK SISI 1.0 mm / SXK SISI ONE** - supplied ready-to-use "lamb" structure, grain size: 1.0 mm **SXR SISI -** Ready-to-use "woodworm" structure, grain size: 2.0, 3.0 mm	1,9÷4,5	Depending on the grain size
	Acrylic plasters: **KHK** - supplied ready-to-use structure, "lamb" type, grain size: 1.5, 2.0, 3.0 mm		

	KHR - supplied ready-to-use "woodworm" structure with carbon, grain size: 2.0; 3.0 mm		
	Mosaic plaster masses: **BUP -** supplied ready-to-use "mosaic" structure, grain size: 1.0 ÷ 1.6 mm **BUP Natura -** Supplied in a ready-to-use "small "mosaic" structure grain size: 0.2 ÷ 1.2 mm	1,9÷4,5	Depending on the grain size
Paint coatings (paints)	**LK 300 / ANTIKA SILIKAT F coating paint (optionally used)** used with mineral plaster mortars, supplied ready for use **Siloxane façade paint LX 300 (optional)** for use with all structural plaster materials, supplied ready for use **LX 350 / QX 300 silicone coating paint (optionally used)** for all structural plastering, supplied ready for use **Q 360 silicone coaiting paint (optional)** used with all structural plaster coatings, supplied ready for use **HC 425 coaiting paint (optionally used)** in combination with HCF HYDROCON mineral plaster mortar, supplied ready for use	0,20÷0,40 (l/m^2)	



1. *Wall*
2. *Adhesive mortar*
3. *Thermal insulation*
4. *Mechanical fasteners (optional)*
5. *Fibreglass mesh*
6. *Reinforced layer*
7. *Plaster primer*
8. *Plaster mortar*
9. *Painting coating (optional)*

Fig.1 Layer arrangement in the LOBATHERM S insulation system

The conditions for safe use and use of LOBATHERM S insulation system components are presented in the safety data sheets. The safety data sheet contains a description of the hazards that may be caused by the product, as well as basic physicochemical data about it. Full information on the insulation system, individual components and documentation can be found on the manufacturer's website www. sievert.pl

Production of dry mortars

In the production plants of Sievert Polska Sp. z o.o. in Strzelin and in Rawa Mazowiecka, loose products, i.e. adhesive mortars and plasters, are produced.
They include the following product group:

- Adhesive mortars: **S-102, Z-102.**
- Mineral plasters: **SQS.**

All information on the properties and safety data sheets, DWU is available on the manufacturer's website www.sievert.pl
The production process of loose products is carried out according to the scheme (Fig. 2). Raw materials, sands and aggregates as well as chemical additives are stored in the warehouse. Sand and aggregate are dried and then screened into appropriate fractions. The appropriate components are dosed into the mixer. The resulting mixture is packed into bags, which are placed on pallets and secured with a foil hood. The finished product is stored in a warehouse.

Approximate material composition of adhesive mortars:

Adhesive mortars S-102 and Z-102.	
Material	Mass participation
Binder	25-50
Fillers	5-15
Silica sand	50-75
Additives	0-5

Approximate material composition of mineral plaster:

Mineral plasters	
Material	Mass participation
Binder	10-25
Fillers	15-30
Aggregate	50-75
Additives	0-5

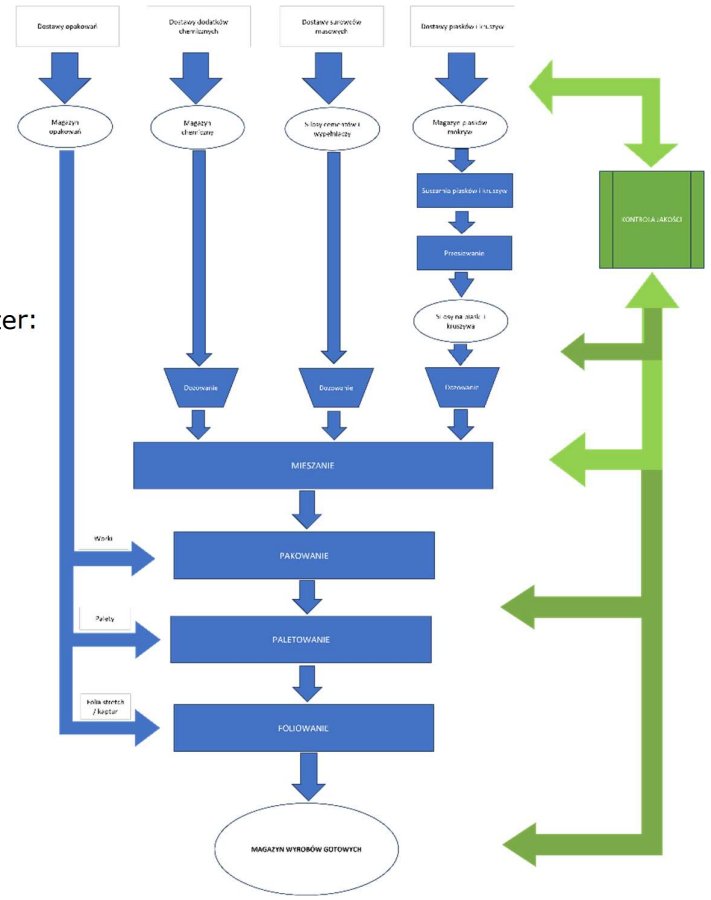


Fig. 2 Technological diagram of the production process of dry products

Wet Mortar Production

The production plant of Sievert Polska Sp. z o.o. in Rawa Mazowiecka produces wet products, i.e. plaster primers and plaster coatings.
They include the following product group:

- Plaster primer: **GTA.**
- Plaster mortar: **SHK, SXK SISI, KHK, BUP, BUP NATURA.**

All information on the properties and safety data sheets, DWU is available on the manufacturer's website www.sievert.pl
The production process of wet products is carried out according to the scheme (Fig. 3). Raw materials and chemical additives are stored in stock. The appropriate components are weighed and then dosed into the mixer. The resulting product is checked at the output by quality control. The finished mixture is packed into buckets, which are placed on pallets. The manufactured product is stored in a warehouse and sent for sale.

Approximate material composition of plaster primers:

Plaster primer GTA	
Material	Mass participation
Binder	2,5-10
Water	25-50
Aggregate	10,25
Additives	0-5
Pigment	0-5
Fillers	25-50

Approximate material composition of plaster mortar:

Plater mortar SHK, SXK SISI, KHK, BUP, BUP NATURA	
Material	Mass participation
Binder	10-25
Water	2,5-10
Aggregate	25-50
Additives	0-5
Pigment	0-5
Fillers	20-50

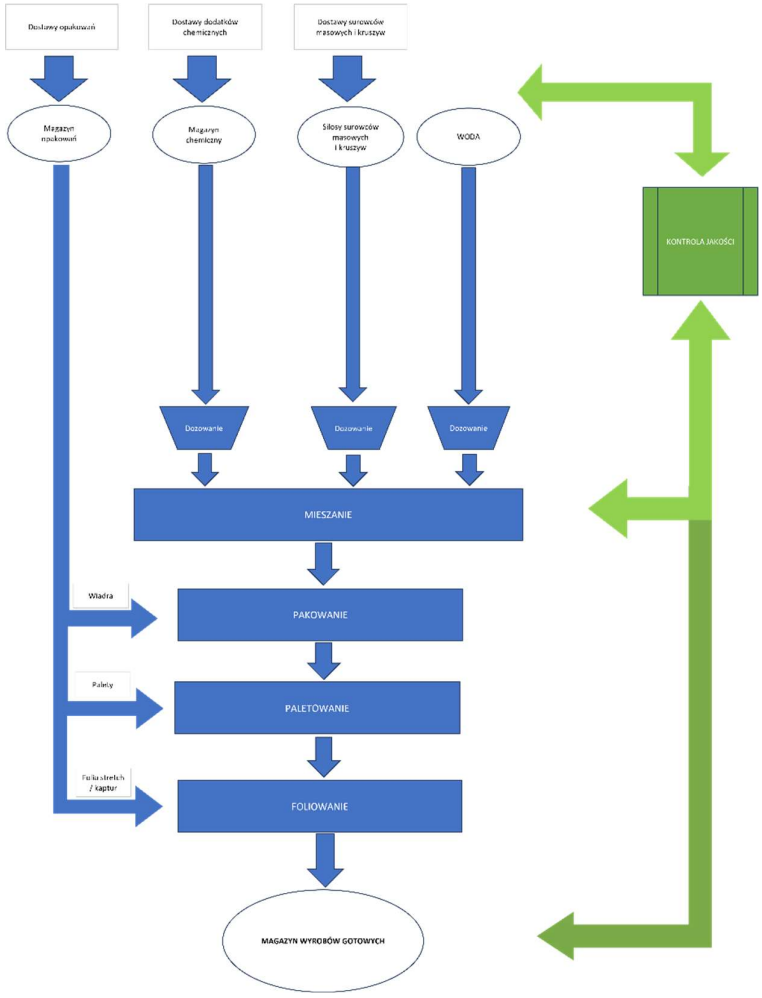


Fig. 3 Technological diagram of the production process of wet products

Production of paint coatings

The following paint coatings are produced at the production plant of Sievert Polska Sp. z o.o. in Rawa Mazowiecka:

- **Silicone coating paint Q 360, QX 300**
- **Coating paint HC 425.**

All information on the properties and safety data sheets, DWU is available on the manufacturer's website www.sievert.pl

The production process of paint coatings is carried out according to the scheme (Fig. 4). The material and chemical additives are delivered for production from external suppliers and then stored in a warehouse. Depending on the recipe, the appropriate number of components is weighed. The ingredients in the right quantities are mixed and the finished paint is poured into buckets that are placed on pallets. The manufactured products are stored in a warehouse and sent for sale.

Approximate material composition of paint coatings

Silicone coating paint Q 360, QX 300, HC 425	
Material	Mass participation
Binder	10-25
Water	25-50
Fillers	2,5-10
Pigment	5-15
Extras	25-50

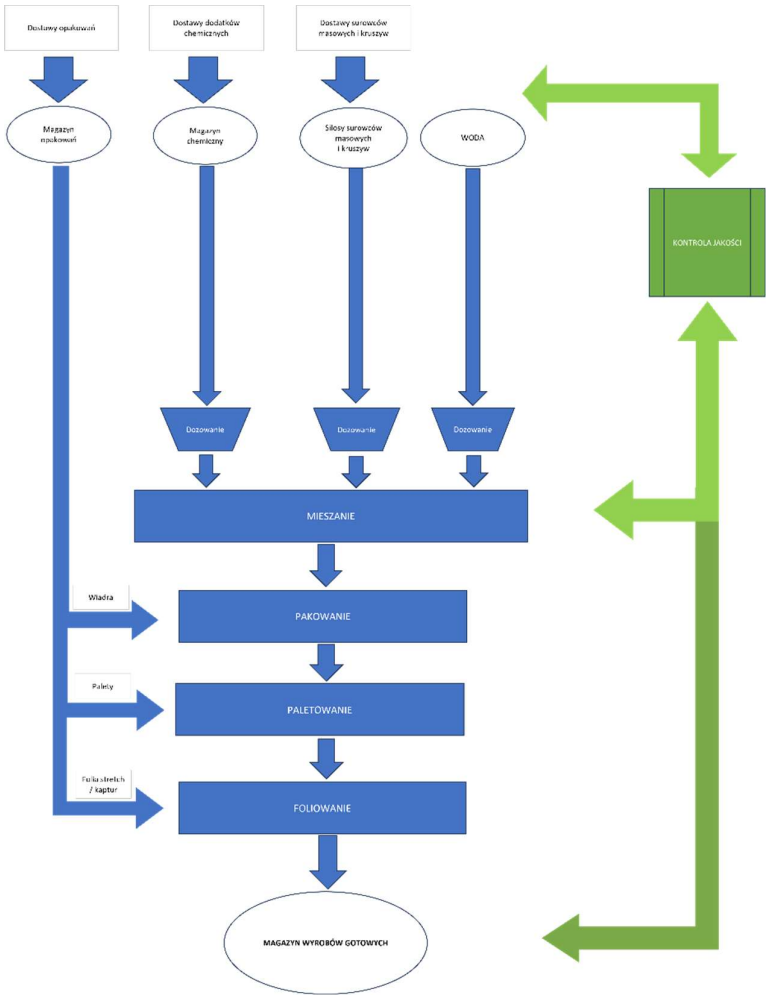
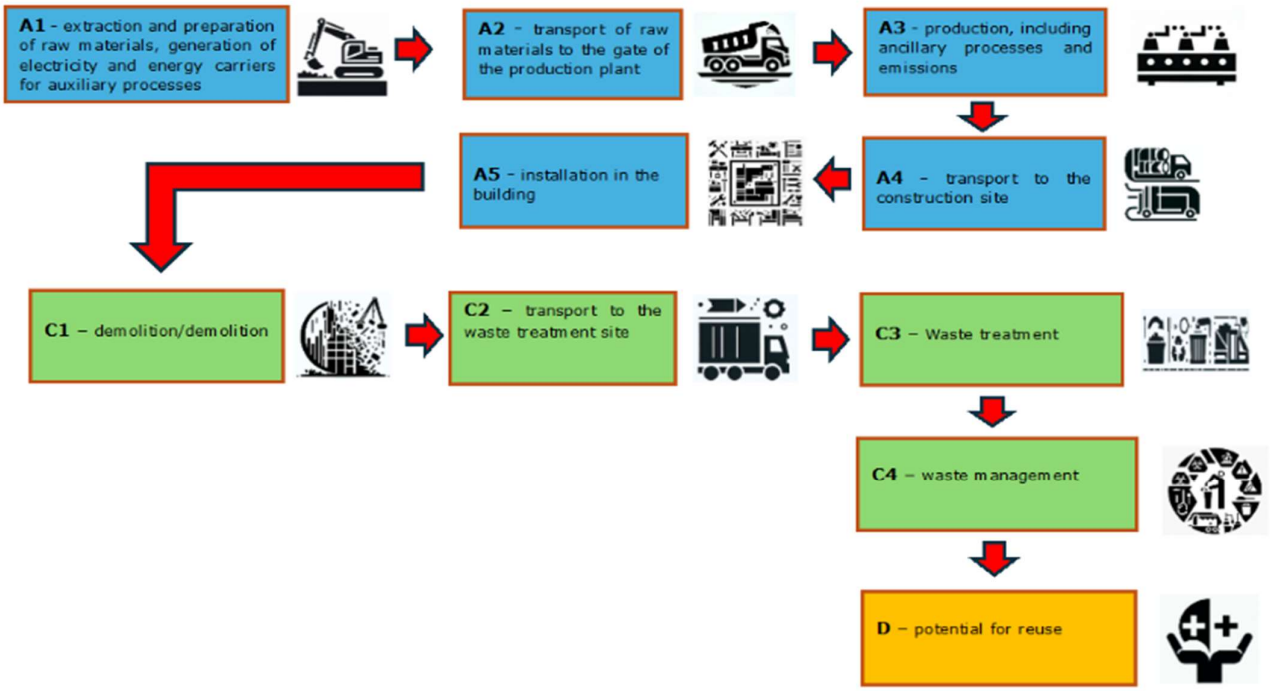


Fig. 4 Technological diagram of the production process of paint coatings.

3. LCA: SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

System Limitations

The life cycle analysis of the tested products includes modules A1-A3, A4, A5, C1-C4 and D (Cradle to Gate with options) in accordance with PN-EN 15804.



Duration of data collection

The data on the production process is from 2022 (period from 01.01.22 to 31.12.22).

Declared Unit

1 m² thermal insulation system

Assumptions

A1 – extraction and consumption of raw materials refers to specific mass shares in the production process, attributable to the declared unit 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_2, NO_x, SO_2 and dust emission values from the production process obtained as a result of measurements carried out on the premises of the plant, the rest estimated on the basis of fuel consumption.

A4 – transport of materials (components of thermal insulation systems) to the construction site is carried out according to the developed scenario.
It assumes the method of transport and the distance over which the materials are transported.

A5 – installation of thermal insulation systems is carried out according to the developed scenario. It determines the consumption of energy and materials, as well as the amount of waste generated by the assembly process.

C1 – dismantling/demolition of the material. The data is collected based on the developed scenario. At the demolition site, the waste is pre-sorted. Dismantling of thermal insulation systems does not require energy and material expenditures, it is possible to demolish them manually or with the use of power tools. The impact of these operations is so small that the environmental impact resulting from module C1 is negligible.

C2 – pre-sorted waste from the demolition of thermal insulation systems is transported to the waste treatment plant according to the scenario. Module C2 also takes into account the transport of waste resulting from the activities resulting from module A5.

C3 – takes into account the environmental impact of the treatment of construction and demolition waste. It is assumed that all waste generated as a result of activities in modules A5 and C1 goes to a waste treatment plant. The calculations are made based on the developed scenario.

C4 – describes the processes of neutralization of waste generated as a result of the installation and demolition of thermal insulation systems. The calculations are made on the basis of the developed scenario.

D – refers to the impact and effects of the use of secondary material. Thermal utilization of packaging materials for part of polystyrene waste is assumed. It is also assumed that the insulation material (polystyrene) will be partially recovered from the waste fraction. The calculations are made 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 KOBiZE. The emission factors for electricity were determined using the actual KOBiZE data. The applied emission factor of Polish electricity (Ecoinvent supplemented with current national data KOBiZE) is 0.685 kg CO_2/kWh. A detailed analysis of data quality was part of an external audit.

Allocation	All data on components manufactured in 2 plants of Sievert Polska Sp. z o.o. in Strzelin and Rawa Mazowiecka were provided by the manufacturer and were referred to the declared unit (DU) of the product – **1 m²** of the thermal insulation system. Data on the production of components from outside the Sievert Polska Sp. z o.o. plant were taken from the EcoInvent database. In this case, the allocation was made on the basis of the consumption of external components per declared unit, which was provided by the manufacturer of the thermal insulation systems. The allocation rules used in this EPD are based on the general principles of ICIMB-PCR A.

4. LCA: SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

For the life cycle analysis of products covered by the Cradle to gate with options, scenarios have been developed for modules A4, A5 and C1-C4 and D:

Module A4 - *Transport to the construction site* - Transport is carried out by trucks with a load capacity of 16-32 tonnes meeting the EURO 6 emission standards. The average distance from the plant to the customer is 250 km.

Module A5 – *Installation in the building* – It is assumed that power tools will be used to prepare components for assembly. The electricity consumption for this process is taken into account. Packaging waste from components included in the insulation systems has been taken into account, all of which is directed to the waste treatment plant (Module C3).

Module C1 – *Demolition/demolition* – Manual demolition of insulation systems and initial sorting on site were adopted. The consumption of energy and other raw materials in this module has been omitted due to negligible values. The separated fractions of construction rubble and insulation material (EPS) are sent to the waste treatment plant.

Module C2 – *Transport* – Waste is directed to the waste treatment plant. From there, after separating the recyclable fraction, the fraction for thermal processing and the fraction for storage in a landfill, their appropriate amounts 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. The material is transported to a waste management plant 100 km from the demolition site. Transport to the landfill takes place at a distance of 100 km from the waste treatment plant. Transport to the waste incineration plant takes place at a distance of 100 km from the waste treatment plant.

Module C3 - *Waste treatment, e.g. collection of demolition fractions and treatment of material streams for reuse, recycling and energy recovery.* All waste from assembly and demolition (A5 and C1) goes to the waste treatment plant. Electricity consumption per 1 kg of waste is 0.03 kWh/kg, and energy consumption for internal transport vehicles is 0.3 MJ/kg.

Module C4 - Storage of part of the waste separated in the processing process (module C3) and thermal utilization of part of the waste fraction has been assumed. As a result of thermal utilization, energy is released, which is partially recovered as heat and electrical energy. It was assumed that the average calorific value of polystyrene is 37 MJ/kg. The efficiency of heat recovery from waste incineration is 32.0%, while the efficiency of electricity production is 11.2%. The benefits of thermal waste treatment are included in module D as exported energy.

Module D – Potential for material reuse, the benefits resulting from the thermal treatment of waste and the recovery of some raw materials for the production of polystyrene boards from EPS waste have been taken into account.

Safety of use and environmental protection

The conditions for safe use and use of thermal insulation systems are presented in the safety data sheets available on the manufacturer's website for each product separately.

5. LCA: WYNIKI

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.

DESCRIPTION OF SYSTEM BOUNDARIES (X – INCLUDED IN LCA, MND – UNDECLARED MODULE)																
Production Stage			**Construction phase**		**Stage of use**							**End of Life Stage**				**Benefits and flows beyond 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
A1-A3			**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
X			**X**	**X**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**MND**	**X**	**X**	**X**	**X**	**X**

The following tables present the results of the LCA analysis for the thermal insulation system. Explanations of the abbreviations used to describe the impact categories are given below:

GWP-total Total Global Warming Potential
GWP-fossil Greenhouse Potential: Fossil Fuels
GWP-biogenic Global Warming Potential: Biogenic
GWP-luluc Global Warming Potential: Land Use and Conversion
ODP: Stratospheric ozone depletion potential
AP Acidification potential
EP-freshwater Eutrophication potential of freshwater environments
EP-marine Eutrophication potential of saltwater environments
EP-terrestial Potential for eutrophication of terrestrial environments
POCP Tropospheric ozone formation potential
ADP-minerals&metals Potential for abiotic depletion of non-fossil fuels
ADP-fossil Potential for abiotic depletion of fossil fuel feedstocks
WDP Water deprivation potential (user),
PM Potential incidence of diseases caused by particulate emissions
IRP Ionising radiation (potential human exposure efficacy to U235)
ETP-fw Potential Comparison Unit of Ecosystem Toxicity
HTP-c Potential comparative unit toxic to humans, neoplastic diseases
HTP-nc Potential comparative human toxic unit, non-cancer diseases
SQP Indicator of potential soil quality

PERE Consumption of renewable energy resources, excluding renewable energy resources used as raw material

PERM Consumption of renewable energy resources used as raw material

PERT Total consumption of renewable, primary energy resources

PEN-RE Consumption of non-renewable primary energy resources, excluding non-renewable primary energy resources used as feedstock

RE Consumption of non-renewable energy resources used as raw material

PENRT Total consumption of non-renewable, primary energy resources

SM Consumption of secondary materials

RSF Consumption of renewable alternative fuels

NRSF Consumption of non-renewable alternative fuels

FW Fresh water consumption

MAIN IMPACT INDICATORS: 1 m² Thermal insulation system LOBATERM S with mineral plaster

	Life Cycle Stage								
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	1,44E+01	5,22E-01	9,89E-01	0,00E+00	2,09E-01	1,53E-01	3,68E-02	-1,82E+00
GWP-fossil	kg CO_2 eq.	1,50E+01	5,21E-01	9,44E-01	0,00E+00	2,09E-01	1,50E-01	3,66E-02	-1,80E+00
GWP-biogenic	kg CO_2 eq.	-5,54E-01	4,89E-04	4,42E-02	0,00E+00	1,95E-04	2,99E-03	1,02E-04	-1,98E-02
GWP-luluc	kg CO_2 eq.	5,15E-03	2,53E-04	8,99E-04	0,00E+00	1,01E-04	7,00E-05	4,84E-06	-5,80E-04
ODP	kg CFC11 eq.	8,34E-06	1,11E-08	1,37E-09	0,00E+00	4,42E-09	1,43E-09	5,73E-10	-3,18E-08
AP	mol H+ eq.	2,16E-01	1,11E-03	4,26E-03	0,00E+00	4,44E-04	1,07E-03	3,25E-04	-1,02E-02
EP-freshwater	kg PO_4 eq.	2,06E-03	3,61E-05	1,20E-03	0,00E+00	1,44E-05	8,35E-05	1,11E-06	-1,04E-03
EP-marine	kg N eq.	1,24E-01	2,80E-04	7,56E-04	0,00E+00	1,12E-04	4,13E-04	1,50E-04	-1,02E-03
EP-terrestrial	mol N eq.	7,23E-01	2,85E-03	5,83E-03	0,00E+00	1,14E-03	4,33E-03	1,63E-03	-9,27E-03
POCP	kg NMVOC eq.	3,41E-01	1,72E-03	1,63E-03	0,00E+00	6,89E-04	1,28E-03	4,86E-04	-8,22E-03
ADP-minerals & metals	kg Sb eq.	7,78E-05	1,66E-06	8,85E-07	0,00E+00	6,64E-07	8,90E-08	1,43E-08	-6,24E-07
ADP-fossil	MJ	2,77E+02	7,22E+00	9,79E+00	0,00E+00	2,89E+00	1,76E+00	4,69E-01	-1,47E+01
WDP	WDP (m^3) świat. ekw	9,25E+00	3,02E-02	4,52E-02	0,00E+00	1,21E-02	5,48E-03	1,03E-03	-5,71E-02

ADDITIONAL IMPACT INDICATORS: 1 m² Thermal insulation system LOBATERM S with mineral plaster

	Life Cycle Stage								
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease incidency	1,12E-06	3,79E-08	8,01E-09	0,00E+00	1,51E-08	2,23E-08	9,23E-09	-9,52E-08
IRP	kBq U235 eq.	7,41E-01	9,77E-03	8,23E-03	0,00E+00	3,91E-03	1,08E-03	2,78E-04	-8,21E-03
ETP-fw	CTUe	2,06E-03	3,61E-05	1,20E-03	0,00E+00	1,44E-05	8,35E-05	1,11E-06	-1,04E-03
HTP-c	CTUh	2,20E-09	1,21E-10	3,34E-11	0,00E+00	4,86E-11	1,65E-11	6,03E-12	-7,96E-09
HTP-nc	CTUh	5,96E-08	1,87E-09	8,69E-10	0,00E+00	7,47E-10	4,78E-10	1,84E-10	-5,93E-08
SQP	-	1,10E+02	4,36E+00	1,69E+00	0,00E+00	1,74E+00	1,88E-01	5,80E-01	-3,06E+00

INDICATORS DESCRIBING THE CONSUMPTION OF RESOURCES: 1 m² Thermal insulation system LOBATERM S with mineral plaster

	Life Cycle Stage							
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2,62E+01	1,14E-01	9,01E-01	0,00E+00	4,55E-02	6,69E-02	1,38E-02	-6,24E-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	2,62E+01	1,14E-01	9,01E-01	0,00E+00	4,55E-02	6,69E-02	1,38E-02	-6,24E-01
PEN-RE	MJ	2,39E+04	7,53E+00	1,32E+01	0,00E+00	3,01E+00	2,05E+00	4,91E-01	-2,01E+01
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	2,39E+04	7,53E+00	1,32E+01	0,00E+00	3,01E+00	2,05E+00	4,91E-01	-2,01E+01
SM	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
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^3	1,01E-01	1,14E-03	1,93E-02	0,00E+00	4,58E-04	1,34E-03	1,64E-05	-1,07E-02

INDICATORS DESCRIBING OUTPUT STREAMS AND WASTE: 1 m² Thermal insulation system LOBATERM S with mineral plaster

	Life Cycle Stage							
Indicator	**Unit (referenced to DU)**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Amount of hazardous waste	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
Amount of non-hazardous waste	Kg	8,24E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of radioactive waste	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
Reusable components	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
Recyclable Materials	Kg	2,05E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,00E-01
Energy Recovery Materials	Kg	1,68E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ/energy carrier	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,16E+00

BIOGENIC CARBON

Biogenic carbon content of the product (kg C_{org})	**1,14E-02**
Biogenic carbon content in the package (kg C_{org})	**1,59E-01**

MAIN IMPACT INDICATORS: 1 m² Thermal insulation system LOBATERM S with silicone plaster

	Life Cycle Stage								
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	1,61E+01	6,34E-01	6,98E-01	0,00E+00	2,54E-01	1,53E-01	3,68E-02	-1,86E+00
GWP-fossil	kg CO_2 eq.	1,64E+01	6,33E-01	6,66E-01	0,00E+00	2,53E-01	1,50E-01	3,66E-02	-1,84E+00
GWP-biogenic	kg CO_2 eq.	-3,15E-01	5,93E-04	3,12E-02	0,00E+00	2,37E-04	2,99E-03	1,02E-04	-2,02E-02
GWP-luluc	kg CO_2 eq.	5,96E-03	3,07E-04	6,35E-04	0,00E+00	1,23E-04	7,00E-05	4,84E-06	-5,92E-04
ODP	kg CFC11 eq.	2,26E-05	1,34E-08	9,70E-10	0,00E+00	5,37E-09	1,43E-09	5,73E-10	-3,25E-08
AP	mol H+ eq.	1,97E-01	1,35E-03	3,00E-03	0,00E+00	5,39E-04	1,07E-03	3,25E-04	-1,04E-02
EP-freshwater	kg PO_4 eq.	2,34E-03	4,38E-05	8,49E-04	0,00E+00	1,75E-05	8,35E-05	1,11E-06	-1,06E-03
EP-marine	kg N eq.	9,47E-02	3,40E-04	5,34E-04	0,00E+00	1,36E-04	4,13E-04	1,50E-04	-1,05E-03
EP-terrestrial	mol N eq.	5,71E-01	3,46E-03	4,11E-03	0,00E+00	1,38E-03	4,33E-03	1,63E-03	-9,45E-03
POCP	kg NMVOC eq.	2,69E-01	2,09E-03	1,15E-03	0,00E+00	8,37E-04	1,28E-03	4,86E-04	-8,38E-03
ADP-minerals & metals	kg Sb eq.	8,90E-05	2,02E-06	6,25E-07	0,00E+00	8,07E-07	8,90E-08	1,43E-08	-6,37E-07
ADP-fossil	MJ	3,01E+02	8,76E+00	6,91E+00	0,00E+00	3,51E+00	1,76E+00	4,69E-01	-1,50E+01
WDP	WDP (m^3) świat. ekw	1,05E+01	3,66E-02	3,19E-02	0,00E+00	1,47E-02	5,48E-03	1,03E-03	-5,83E-02

ADDITIONAL IMPACT INDICATORS: 1 m² Thermal insulation system LOBATERM S with silicone plaster

	Life Cycle Stage a								
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease incidency	1,11E-06	4,60E-08	5,65E-09	0,00E+00	1,84E-08	2,23E-08	9,23E-09	-9,71E-08
IRP	kBq U235 eq.	8,53E-01	1,19E-02	5,81E-03	0,00E+00	4,74E-03	1,08E-03	2,78E-04	-8,37E-03
ETP-fw	CTUe	2,34E-03	4,38E-05	8,49E-04	0,00E+00	1,75E-05	8,35E-05	1,11E-06	-1,06E-03
HTP-c	CTUh	2,57E-09	1,47E-10	2,36E-11	0,00E+00	5,90E-11	1,65E-11	6,03E-12	-8,12E-09
HTP-nc	CTUh	8,26E-08	2,27E-09	6,13E-10	0,00E+00	9,07E-10	4,78E-10	1,84E-10	-6,05E-08
SQP	-	9,25E+01	5,29E+00	1,20E+00	0,00E+00	2,12E+00	1,88E-01	5,80E-01	-3,12E+00

INDICATORS DESCRIBING THE CONSUMPTION OF RESOURCES: 1 m² Thermal insulation system LOBATERM S with silicone plaster

	Life Cycle Stage								
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2,33E+01	1,38E-01	6,36E-01	0,00E+00	5,52E-02	6,69E-02	1,38E-02	-6,37E-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	2,33E+01	1,38E-01	6,36E-01	0,00E+00	5,52E-02	6,69E-02	1,38E-02	-6,37E-01
PEN-RE	MJ	3,03E+02	9,15E+00	9,33E+00	0,00E+00	3,66E+00	2,05E+00	4,91E-01	-2,05E+01
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	3,03E+02	9,15E+00	9,33E+00	0,00E+00	3,66E+00	2,05E+00	4,91E-01	-2,05E+01
SM	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
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^3	1,10E-01	1,39E-03	1,36E-02	0,00E+00	5,56E-04	1,34E-03	1,64E-05	-1,10E-02

INDICATORS DESCRIBING OUTPUT STREAMS AND WASTE: 1 m² Thermal insulation system LOBATERM S with silicone plaster

		Life Cycle Stage							
Indicator	**Unit (referenced to DU)**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Amount of hazardous waste	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
Amount of non-hazardous waste	Kg	8,24E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of radioactive waste	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
Reusable components	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
Recyclable Materials	Kg	2,05E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,00E-01
Energy Recovery Materials	Kg	1,70E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ/energy carrier	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,35E+00

BIOGENIC CARBON

Biogenic carbon content of the product (kg C_{org})	**1,05E-02**
Biogenic carbon content in the package (kg C_{org})	**1,50E-01**

MAIN IMPACT INDICATORS: 1 m² Thermal insulation system LOBATERM S with acrylic plaster

		Life Cycle Stage							
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	1,61E+01	6,34E-01	6,98E-01	0,00E+00	2,54E-01	1,53E-01	3,68E-02	-1,86E+00
GWP-fossil	kg CO_2 eq.	1,64E+01	6,33E-01	6,66E-01	0,00E+00	2,53E-01	1,50E-01	3,66E-02	-1,84E+00
GWP-biogenic	kg CO_2 eq.	-3,15E-01	5,93E-04	3,12E-02	0,00E+00	2,37E-04	2,99E-03	1,02E-04	-2,02E-02
GWP-luluc	kg CO_2 eq.	5,96E-03	3,07E-04	6,35E-04	0,00E+00	1,23E-04	7,00E-05	4,84E-06	-5,92E-04
ODP	kg CFC11 eq.	2,26E-05	1,34E-08	9,70E-10	0,00E+00	5,37E-09	1,43E-09	5,73E-10	-3,25E-08
AP	mol H+ eq.	1,97E-01	1,35E-03	3,00E-03	0,00E+00	5,39E-04	1,07E-03	3,25E-04	-1,04E-02
EP-freshwater	kg PO_4 eq.	2,34E-03	4,38E-05	8,49E-04	0,00E+00	1,75E-05	8,35E-05	1,11E-06	-1,06E-03
EP-marine	kg N eq.	9,47E-02	3,40E-04	5,34E-04	0,00E+00	1,36E-04	4,13E-04	1,50E-04	-1,05E-03
EP-terrestrial	mol N eq.	5,71E-01	3,46E-03	4,11E-03	0,00E+00	1,38E-03	4,33E-03	1,63E-03	-9,45E-03
POCP	kg NMVOC eq.	2,69E-01	2,09E-03	1,15E-03	0,00E+00	8,37E-04	1,28E-03	4,86E-04	-8,38E-03
ADP-minerals & metals	kg Sb eq.	8,90E-05	2,02E-06	6,25E-07	0,00E+00	8,07E-07	8,90E-08	1,43E-08	-6,37E-07
ADP-fossil	MJ	3,01E+02	8,76E+00	6,91E+00	0,00E+00	3,51E+00	1,76E+00	4,69E-01	-1,50E+01
WDP	WDP (m^3) świat. ekw	1,05E+01	3,66E-02	3,19E-02	0,00E+00	1,47E-02	5,48E-03	1,03E-03	-5,83E-02

ADDITIONAL IMPACT INDICATORS: 1 m² System ociepleń LOBATERM S z tynkiem silikonowym

	Life Cycle Stage								
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease incidency	1,11E-06	4,60E-08	5,65E-09	0,00E+00	1,84E-08	2,23E-08	9,23E-09	-9,71E-08
IRP	kBq U235 eq.	8,53E-01	1,19E-02	5,81E-03	0,00E+00	4,74E-03	1,08E-03	2,78E-04	-8,37E-03
ETP-fw	CTUe	2,34E-03	4,38E-05	8,49E-04	0,00E+00	1,75E-05	8,35E-05	1,11E-06	-1,06E-03
HTP-c	CTUh	2,57E-09	1,47E-10	2,36E-11	0,00E+00	5,90E-11	1,65E-11	6,03E-12	-8,12E-09
HTP-nc	CTUh	8,26E-08	2,27E-09	6,13E-10	0,00E+00	9,07E-10	4,78E-10	1,84E-10	-6,05E-08
SQP	-	9,25E+01	5,29E+00	1,20E+00	0,00E+00	2,12E+00	1,88E-01	5,80E-01	-3,12E+00

INDICATORS DESCRIBING THE CONSUMPTION OF RESOURCES: 1 m² Thermal insulation system LOBATERM S with acrylic plaster

	Life Cycle Stage								
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2,33E+01	1,38E-01	6,36E-01	0,00E+00	5,52E-02	6,69E-02	1,38E-02	-6,37E-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	2,33E+01	1,38E-01	6,36E-01	0,00E+00	5,52E-02	6,69E-02	1,38E-02	-6,37E-01
PEN-RE	MJ	3,03E+02	9,15E+00	9,33E+00	0,00E+00	3,66E+00	2,05E+00	4,91E-01	-2,05E+01
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	3,03E+02	9,15E+00	9,33E+00	0,00E+00	3,66E+00	2,05E+00	4,91E-01	-2,05E+01
SM	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
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^3	1,10E-01	1,39E-03	1,36E-02	0,00E+00	5,56E-04	1,34E-03	1,64E-05	-1,10E-02

WSKAŹNIKI OPISUJĄCE STRUMIENIE WYJŚCIOWE I ODPADY: 1 m² Thermal insulation sysem LOBATERM S with acrylic plaster

	Life Cycle Stage								
Indicator	**Unit (referenced to DU)**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Amount of hazardous waste	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
Amount of non-hazardous waste	Kg	8,24E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of radioactive waste	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
Reusable components	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
Recyclable Materials	Kg	2,05E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,00E-01
Energy Recovery Materials	Kg	1,70E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ/energy carrier	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,35E+00

Łukasiewicz
Instytut Ceramiki
i Materiałów Budowlanych

ENVIRONMENTAL PRODUCT DECLARATION
No. 03-07/2024

sievert

BIOGENIC CARBON	
Biogenic carbon content of the product (kg C_{org})	1,05E-02
Biogenic carbon content in the package (kg C_{org})	1,50E-01

MAIN IMPACT INDICATORS: 1 m² Thermal insulation system LOBATERM S with mosaic plaster

		Life Cycle Stage							
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	1,82E+01	8,88E-01	6,98E-01	0,00E+00	3,55E-01	1,53E-01	4,38E-02	-1,92E+00
GWP-fossil	kg CO_2 eq.	1,85E+01	8,86E-01	6,66E-01	0,00E+00	3,54E-01	1,50E-01	4,37E-02	-1,90E+00
GWP-biogenic	kg CO_2 eq.	-3,27E-01	8,31E-04	3,12E-02	0,00E+00	3,32E-04	2,99E-03	1,22E-04	-2,09E-02
GWP-luluc	kg CO_2 eq.	7,74E-03	4,30E-04	6,35E-04	0,00E+00	1,72E-04	7,00E-05	5,78E-06	-6,12E-04
ODP	kg CFC11 eq.	3,71E-05	1,88E-08	9,70E-10	0,00E+00	7,52E-09	1,43E-09	6,83E-10	-3,36E-08
AP	mol H+ eq.	2,20E-01	1,89E-03	3,00E-03	0,00E+00	7,55E-04	1,07E-03	3,88E-04	-1,07E-02
EP-freshwater	kg PO_4 eq.	2,99E-03	6,14E-05	8,49E-04	0,00E+00	2,46E-05	8,35E-05	1,32E-06	-1,10E-03
EP-marine	kg N eq.	9,67E-02	4,76E-04	5,34E-04	0,00E+00	1,91E-04	4,13E-04	1,79E-04	-1,08E-03
EP-terrestrial	mol N eq.	5,91E-01	4,84E-03	4,11E-03	0,00E+00	1,94E-03	4,33E-03	1,95E-03	-9,78E-03
POCP	kg NMVOC eq.	2,77E-01	2,93E-03	1,15E-03	0,00E+00	1,17E-03	1,28E-03	5,79E-04	-8,67E-03
ADP-minerals & metals	kg Sb eq.	1,05E-04	2,82E-06	6,25E-07	0,00E+00	1,13E-06	8,90E-08	1,71E-08	-6,59E-07
ADP-fossil	MJ	3,36E+02	1,23E+01	6,91E+00	0,00E+00	4,91E+00	1,76E+00	5,59E-01	-1,55E+01
WDP	WDP (m^3) świat. ekw	1,21E+01	5,13E-02	3,19E-02	0,00E+00	2,05E-02	5,48E-03	1,23E-03	-6,03E-02

ADDITIONAL IMPACT INDICATORS: 1 m² Thermal insulation system LOBATERM S witj mosaic plaster

		Life Cycle Stage							
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease incidency	1,28E-06	6,44E-08	5,65E-09	0,00E+00	2,57E-08	2,23E-08	1,10E-08	-1,00E-07
IRP	kBq U235 eq.	1,08E+00	1,66E-02	5,81E-03	0,00E+00	6,64E-03	1,08E-03	3,32E-04	-8,66E-03
ETP-fw	CTUe	2,99E-03	6,14E-05	8,49E-04	0,00E+00	2,46E-05	8,35E-05	1,32E-06	-1,10E-03
HTP-c	CTUh	3,25E-09	2,06E-10	2,36E-11	0,00E+00	8,26E-11	1,65E-11	7,19E-12	-8,40E-09
HTP-nc	CTUh	1,11E-07	3,18E-09	6,13E-10	0,00E+00	1,27E-09	4,78E-10	2,19E-10	-6,26E-08
SQP	-	1,06E+02	7,41E+00	1,20E+00	0,00E+00	2,96E+00	1,88E-01	6,91E-01	-3,23E+00

INDICATORS DESCRIBING THE CONSUMPTION OF RESOURCES: 1 m² Thermal insulation system LOBATERM S with mosaic plaster

		Life Cycle Stage							
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	2,64E+01	1,93E-01	6,36E-01	0,00E+00	7,73E-02	6,69E-02	1,64E-02	-6,59E-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	2,64E+01	1,93E-01	6,36E-01	0,00E+00	7,73E-02	6,69E-02	1,64E-02	-6,59E-01
PEN-RE	MJ	3,38E+02	1,28E+01	9,33E+00	0,00E+00	5,12E+00	2,05E+00	5,85E-01	-2,12E+01
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	3,38E+02	1,28E+01	9,33E+00	0,00E+00	5,12E+00	2,05E+00	5,85E-01	-2,12E+01
SM	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
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^3	1,46E-01	1,95E-03	1,36E-02	0,00E+00	7,78E-04	1,34E-03	1,96E-05	-1,13E-02

INDICATORS DESCRIBING OUTPUT STREAMS AND WASTE: 1 m^2 Thermal insulation system LOBATERM S with mosaic plaster

	Life Cycle Stage								
Indicator	**Unit (referenced to DU)**	**A1-A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
Amount of hazardous waste	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
Amount of non-hazardous waste	Kg	8,24E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Amount of radioactive waste	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
Reusable components	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
Recyclable Materials	Kg	2,05E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	6,00E-01
Energy Recovery Materials	Kg	1,74E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ/energy carrier	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,67E+00

BIOGENIC CARBON	
Biogenic carbon content of the product (kg C_{org})	**2,08E-02**
Biogenic carbon content in the package (kg C_{org})	**2,01E-01**

6. INTERPRETATION OF RESULTS

Figures 5, 6, 7, 8 and 9 show graphs of the share of individual life cycle modules into the basic impact categories for thermal insulation systems – *LOBATERM S with mineral plaster, LOBATERM S with silicone plaster, LOBATERM S with acrylic plaster, LOBATERM S mosaic plaster:*

Fig. 5 Shares of life cycle modules on the main categories of influences - LOBATERM S with mineral plaster

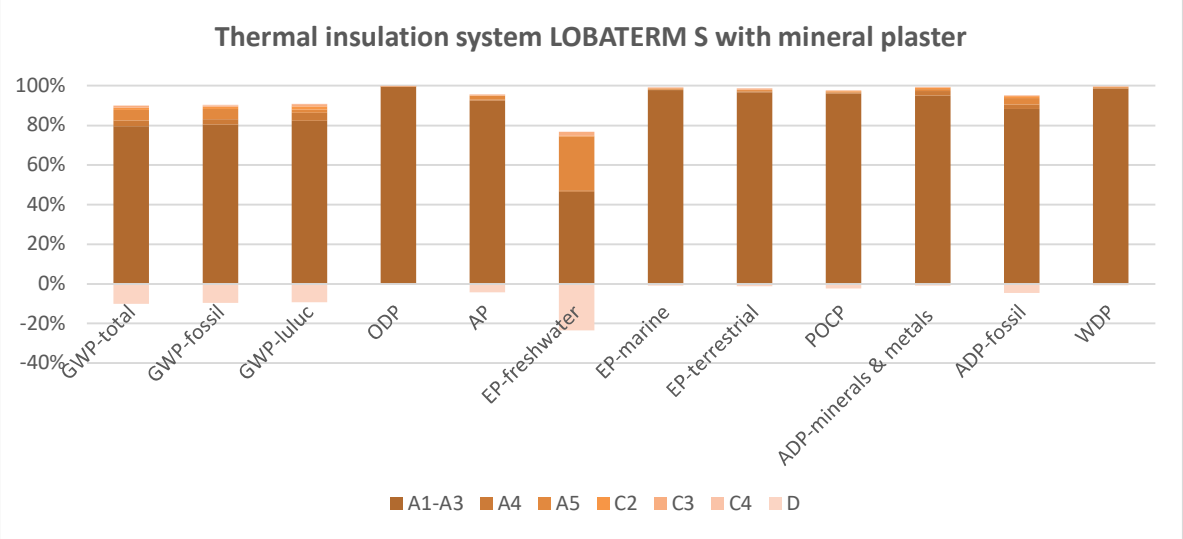


Fig. 6 Shares of life cycle modules on the main categories of influences - LOBATERM S with silicone plaster

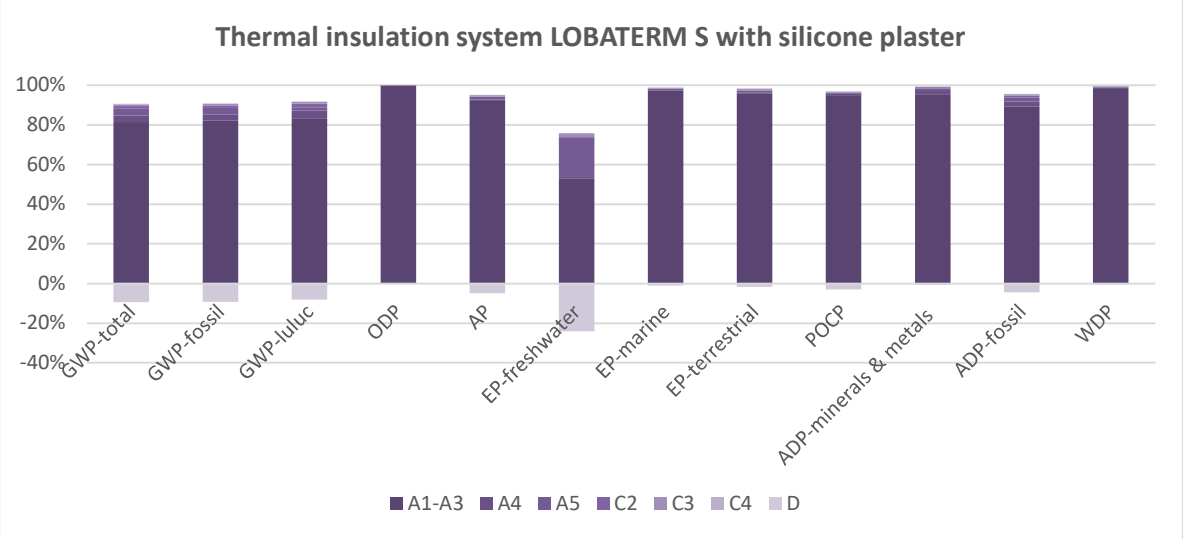


Fig. 7 Shares of life cycle modules on the main categories of influences - LOBATERM S with acrylic plaster

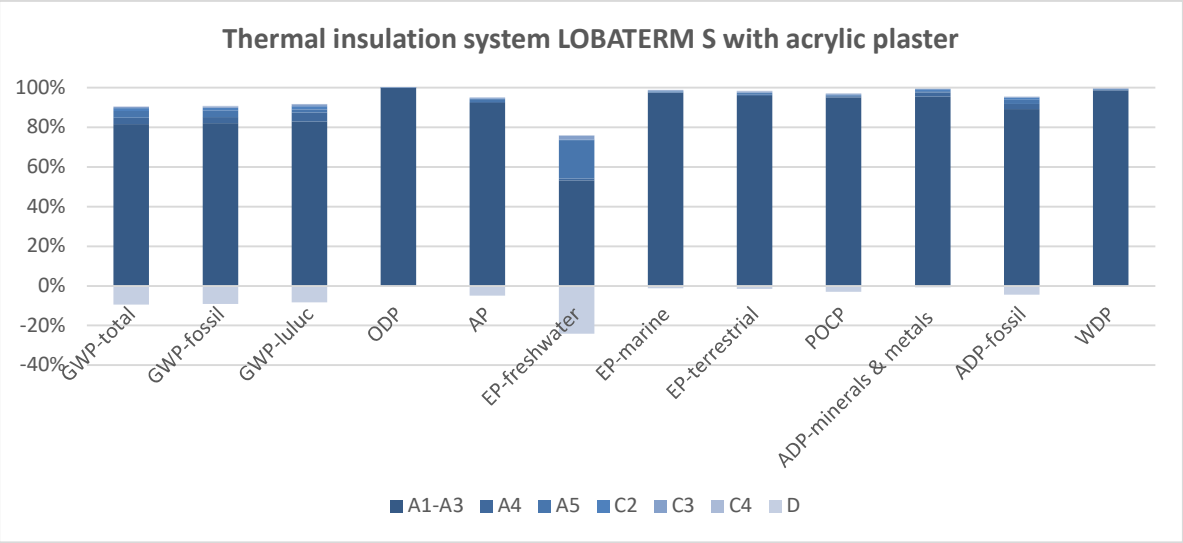
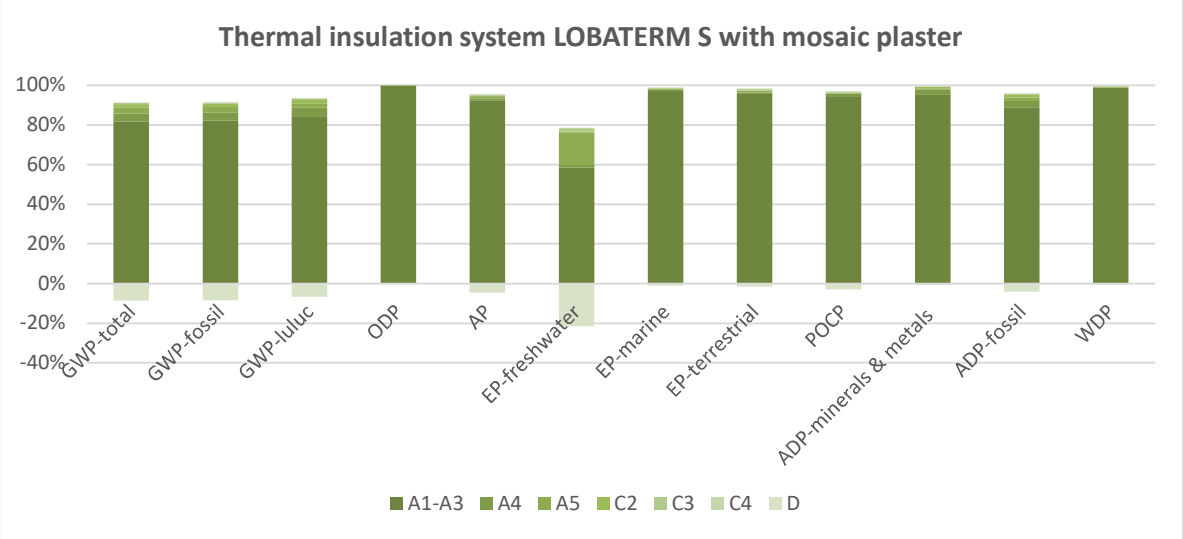


Fig. 8 Shares of life cycle modules on the main categories of influences - LOBATERM S with mosaic plaster



The LCA analysis proved that the processes related to the acquisition of raw materials for the production of components included in thermal insulation systems have the greatest impact on the value of environmental impact indicators. Of all the components, the insulating material – expanded polystyrene panels – has the greatest impact. Modules (A1-A3) represent from 70 to nearly 100% of the value of all impact categories.

Transport to the assembly site (A4) according to the adopted scenario assumes the delivery of materials produced at the plant of Sievert Polska sp. z o.o. and materials from outside the plant to the construction site. Depending on the insulation system, the share of the A4 module accounts for 11-13% of the total impact in the GWP-total category.

The installation of the thermal insulation system (module A5) has a negligible impact on the values of the GWP-total impact category, which is about 7%.

The demolition of thermal insulation systems is carried out manually, as is the initial sorting of waste.
For this reason, the environmental impact for this module is negligible.

Transport to the waste treatment site (module C2) has a relatively small impact on the final values of the LCIA analysis, the share of module C2 in the GWP-total impact category is 5.8-6.2%.

Taking into account the above-mentioned conclusions, the owner of the declaration does not have much influence on the values of environmental impact indicators, as it depends largely on external entities.

LITERATURE

- ✓ PN-EN ISO 14025:2014-04, Environmental labels and declarations - Type III environmental declarations - Principles and procedures.
- ✓ PN-EN 15804+A2:2020, Sustainability of buildings - Environmental declarations of products - Basic principles of categorization of construction products.
- ✓ PN-EN ISO 14040:2009 Environmental Management. Life Cycle Assessment. Rules and structure.
- ✓ PN-EN ISO 14044:2009, Environmental management. Life Cycle Assessment. Requirements and guidelines.
- ✓ EN 15942:2012, Sustainability of construction works – Environmental product declarations – Communication format business-to-business.
- ✓ Data from the company's website: www.sievert.pl

Explanatory materials can be obtained on the declaration owner's website: www.sievert.pl

Łukasiewicz Research Network – Institute of Ceramics and Building Materials
31-983 Kraków, Cementowa 8 Str., Poland

CENTER OF ENVIROMENTAL ENGINEERING

Łukasiewicz
Institute
of Ceramics
and Building
Materials

45-641 Opole, Oświęcimska 21 Str., Poland
Phone: +48 77 456 32 01

www.icimb.lukasiewicz.gov.pl
info.opole@icimb.lukasiewicz.gov.pl

PROCESS ENGINEERING RESEARCH GROUP

TYPE III ENVIRONMENTAL DECLARATION CERTIFICATE

no. 03-07/2024

Products:

Thermal insulation system LOBATHERM S

Owner:

Sievert Polska Sp. z o.o.

36 Nyska Str

57-100 Strzelin

The declaration was developed in accordance with the requirements of the standard:

PN-EN 15804+A2: 2020-03

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

The declaration was verified in accordance with the requirements of the standard:

PN-EN ISO 14025:2010

Environmental labels and declarations
Type III environmental declarations. Principles and procedures

The certificate was issued for the first time on **July 12 2024** and is valid for 5 years or until the said EPD is amended.

Process Engineering Research Group Leader

Ewa Głodek-Bucyk

Ewa Głodek-Bucyk, PhD Eng.

Director of Environmental Engineering Center

Joanna Poluszyńska

Joanna Poluszyńska, PhD

Opole, July 2024