ZAG EPD

Environmental Product Declaration

According to ISO 14025 and EN 15804

POFIX XPS

EPD number	EPD-23/0001
EPD owner	Pofix d.o.o., Dereboj b.b., 1200, Tetovo, North Macedonia
EPD Program operator	ZAG EPD
Issue date	6. 3. 2023
Valid until	5. 3. 2028

ECO PLATFORM EPD VERIFIED

General information	Specific EPD for POFIX XPS insulation panels
Program holder: Slovenian National Building And Civil Engineering Institute - ZAG Dimičeva ulica 12 1000 Ljubljana http://www.zag.si	**Owner of the Environmental Product Declaration:** POFIX d.o.o. Dereboj b.b. 1200, Tetovo www.pofix.com
Number of the Environmental Product Declaration: EPD-23/0001	**Declared unit:** 1 cubic meter of XPS insulation panels
This Environmental Product Declaration is based on the Product Category Rules (PCR): Product Category Rules for Building-Related Products and Services - Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report according to EN 15804+A2:2019 version 1.0, and Part B: Requirements on the EPD for Insulating materials made of foam plastics (ver 2019), issued by the Institut Bauen und Umwelt e.V. (IBU)	**Scope:** A1-A3, C and D
Issue date: 6. 3. 2023 **Valid until:** 5. 3. 2028 **Production plant:** POFIX d.o.o. Dereboj b.b. 1200, Tetovo, North Macedonia	**Verification:** The CEN standard SIST EN 15804 serves as the core Product Category Rule (PCR) Independent verification of the EPD according to EN ISO 14025 ☐ external ☒ internal **Title and the handwritten signature of verificator:** *Janez Turk, PhD* Slovenian National Building And Civil Engineering Institute – ZAG
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1 Product

1.1 Product description

POFIX XPS are cellular plastic products made of extruded polystyrene foam (XPS) with a mostly closed cell structure filled with inert foaming agents (97%) and 3% polystyrene (by volume). XPS panels are manufactured in accordance with the requirements of EN 13164 and are used as construction products for thermal and sound insulation of buildings. The products are available in different dimensions and different treatments of the surface and edges of the insulation boards.

The products comply with the requirements of Regulation (EU) 305/2011 and the technical specification EN 13164:2012 + A1:2015 (Thermal insulation products for buildings - Factory made extruded polystyrene foam (XPS) products - Specification and CE marking).

1.2 Technical Data

The XPS insulation panels are produced at the manufacturer's production plant in Dereboj b.b., 1200, Tetovo, North Macedonia. XPS insulation panels of dimensions 1250 x 600 mm with thicknesses from 20 mm to 200 mm and densities varying from 28,0 to 32,0 kg/m^3 are produced in the plant. This EPD refers to 1 m^3 of POFIX XPS with an average density of 30 kg/m^3 and compressive strength of 300 kPa that was, in the considered period, produced almost exclusively.

Table 1: Overview of the products properties

Essential characteristics	Performance	Harmonized technical characteristics
Dimensions	1250x600xd [mm]	EN 13164:2012 +A1:2015
Thermal conductivity: λD	0.035 [W/mK]	
Reaction to fire	Class E	
Long-term water absorption with full immersion	1 [%]	
Compressive strength	300 [kPa]	
Thermal resistance RD	2,28 (m2K/W)	
Dimensional tolerances	T3	
Tensile strength in the direction of the thickness of the plates	400	
Resistance to water vapor diffusion	55	
Long-term water absorption by diffusion	/	
Creep under compressive load	/	
Freeze/thaw resistance after long-term water absorption by diffusion	/	
Dimensional stability under certain conditions of temperature and humidity	2	
Deformation at specified compressive load and temperature conditions	/	

1.3 Application

The products are primarily intended for thermal insulation in construction, such as insulation of walls, pitched roofs, ETICS, insulation of hollow walls, insulation of ceilings, etc.

1.4 Base materials

The basic materials for the production of POFIX XPS panels are:

- styrene polymer,
- blowing agents,
- additives.

1.5 Manufacturing process

Extruded polystyrene (XPS) is produced by continuous extrusion. In this process, raw polystyrene is melted in the extruder, together with additives for expansion or foaming. This molten mass comes out of the extruder in the form of a gel, which then expands to create a foam with a homogeneous cell structure, which is shaped and cooled into a continuous panel. In the next step, the panel is trimmed and cut to the desired size depending on the purpose, the sides of the panel are profiled if necessary, and the surface is either mechanically sanded or the desired surface structure is thermally imprinted by forming a skin on the panel itself.

Residues from trimming and profiling of panels, as well as non-conforming panels are recycled and returned to the process.

During production, there are no fuel combustion emissions or internal transport emissions.

1.6 Packaging

POFIX XPS panels are packed using HD-PE foil and XPS scraps cut in production, used instead of wooden pallets.

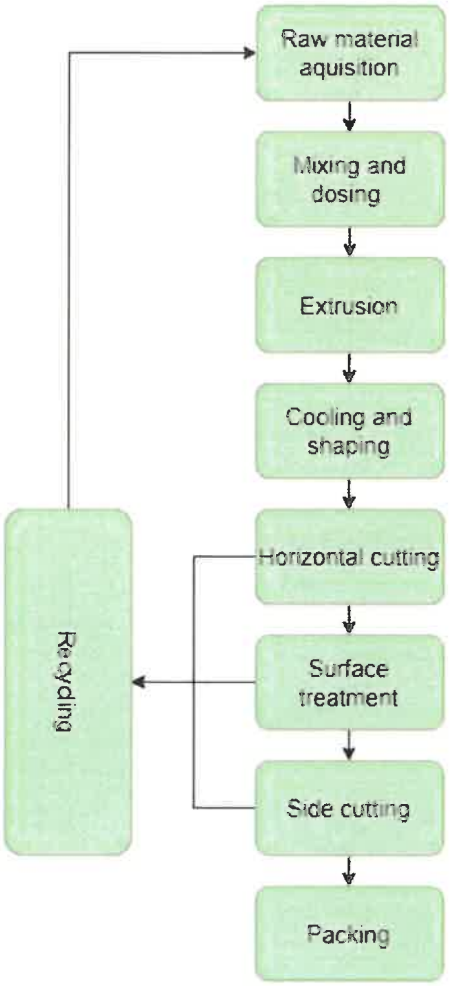

Figure 1: Manufacturing process diagram

1.7 Environment and health during manufacturing

There are no special instructions regarding personal precautions and environmental protection during the handling of the product and during its installation. Product-specific handling recommendations can be found in product and application literature, brochures and data sheets. No further health protection measures, other than those prescribed for manufacturing companies, are required at any conversion step for XPS. XPS insulation has been in use for over 50 years and has no known negative effects on humans, animals or the environment. No substances that damage the ozone layer, as prescribed by the EU, such as CFCs or HCFCs, are used for the production of XPS.

1.8 Reference service life

Service life of the insulation panels is 50 years based on the expected average design life of the building.

1.9 Extraordinary effects

Extreme impacts during the use phase of the product (mechanical damage/earthquake, fire, flood) and their impact on the physical and chemical properties of the product and the impact on the environment and human health by classification into classes according to the supporting standards.

Mechanical damage/earthquake; There is no risk to the environment and to humans from extreme mechanical damage and earthquakes when installed correctly.

Fire; POFIX XPS panels belong to the construction material class E (Material that resists low flame ignition for a short period of time and does not produce a large flame spread).

Flooding; Due to the used polystyrene in POFIX XPS panels, no water polluting components can be washed out in the event of a flood.

1.10 Further information

Further information is available on the website https://pofix.com.

2 LCA: Calculation rules

2.1 Declared unit

The declared unit was defined in accordance with the Product Category Rules (PCR): *Part B: Requirements on the EPD for Insulating materials made of foam plastics (ver 2019), issued by the Institut Bauen und Umwelt e.V. (IBU):*

1 cubic meter of XPS insulation panels.

Conversion factor to 1 kg is 0,033.

2.2 System boundary

The system boundary was defined according to the standard EN 15804. The system boundaries determine the unit processes that are included in LCA analysis.

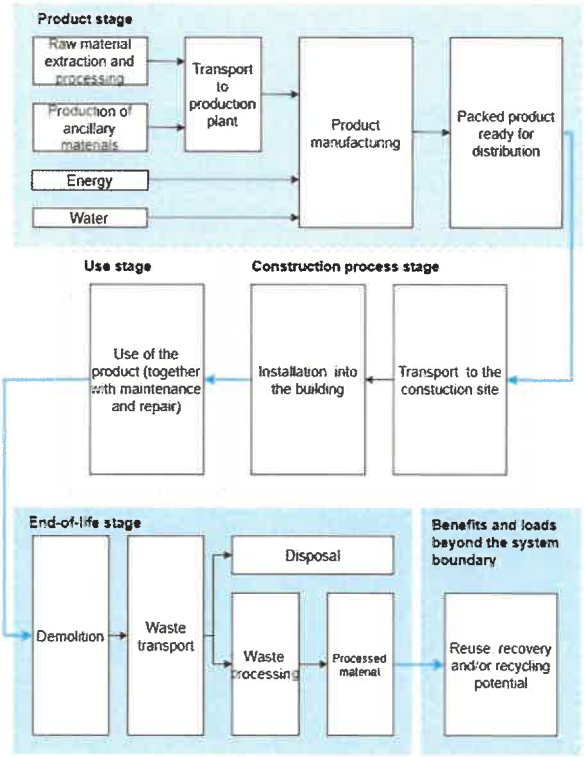

Figure 2: Schematic representation of system boundaries

This LCA study is based on the cradle to gate with modules C1-C4 and module D This means, that in the LCA of the POFIX XPS, the following life cycle stages have been assessed: (i) Product stage, which includes raw material supply (A1), transport to the manufacturer (A2) and production (A3), (ii) End of life stage, which includes de-construction /demolition (C1), transport to waste processing (C2), waste processing for reuse, recovery and/or recycling (C3) and disposal (C4) and (iii) Benefits and burdens beyond the system boundary, that includes recycling, reusing an recovery (D). The schematic representation of system boundaries can be seen in Figure 2.

2.3 Cut-off rules

The cut-off rules are defined in EN 15804:2012+A2:2019, with the following procedure being followed for the exclusion of inputs and outputs in this LCA study:

- all inputs and outputs to/from the studied system have been included in the calculation, for which data are available;
- in case of insufficient input data or data gaps for a unit process, the cut-off criteria has been 1% of renewable and non-renewable primary energy usage and 1% of the total mass input of that unit process. The total of neglected input flows per module has been a maximum of 5% of energy usage and mass.

There have been no excluded relevant input material in this study.

2.4 Data quality

The quality of the data used for calculations within the LCA analysis corresponds to the requirements of EN 15804:

- generic data have been checked for plausibility;
- data sets are complete according to the system boundary within the limits set by the criteria for the exclusion of inputs and outputs;
- data is as current as possible. Data sets used for calculations are valid for the current year and represent a reference year within 10 years for generic data and 5 years for producer specific data;
- the reference year refers to the year which the overall inventory best represents, considering the age/representativeness of the various specific and background data included, i.e., not automatically the year of modelling, calculation, or publication year. Validity refers to the date to which the inventory is still judged sufficiently valid with the documented technological and geographical representativeness;
- all datasets are based on 1-year averaged data;
- the time period over which inputs to and outputs from the system has been accounted for is 100 years from the year for which the data set is deemed representative.

2.5 Background data

The LCA analysis of POFIX XPS system has been conducted with the GaBi 10.6 modelling software, developed by Thinkstep (Sphera Solutions GmbH) in collaboration with the University of Stuttgart. All processes have been modelled on the inventory data given in the Professional and extension database (last update: 2022).

2.6 Period under review

Product data are based on average production information collected for the year 2022.

2.7 Allocation

In this specific LCA analysis, no allocation procedure is required.

2.8 Comparability

Comparison of the environmental performance of construction products using the EPD information has to be based on the product's use and its impacts on the building. Comparisons are possible in the sub-building level if the conditions, listed in EN 15804 are met.

2.9 List of substances

POFIX XPS does not contain substances listed in the »Candidate List of Substances of Very High Concern for authorisation« (http://echa.europa.eu/candidate-list-table). Absence of these substances is declared by the producer.

3 LCA: Scenarios and additional technical information

3.1 Information about biogenic carbon content

There is a relatively small amount of biogenic carbon in the product, especially in the Styrene polymer raw material, 0.99 kg per 1 m^3 of XPS panels. The mass of biogenic carbon contained in the packaging is minor, 0,04 kg per 1 m^3 of XPS panels.

Table 2: Biogenic carbon content

Name	Value	Unit
Biogenic Carbon Content in product	0,99	kg C
Biogenic Carbon Content in accompanying packaging	0,04	kg C

**1kg biogenic carbon is equivalent to 44/12 kg of CO_2*

3.2 Technical information

The following technical information for the declared modules can be used for the development of specific scenarios in the context of a building assessment:

3.2.1 End of life (C1-C4)

In the case of POFIX XPS, a scenario where the panels are deconstructed from the building by hand, and then transported to landfill in 23 %, and to waste processing in 77 % has been used. Transport distance is based on the average distance of 50 km to the local landfill or waste processing. The processed waste is then partly recycled mechanically (10%), and partly incinerated for heat recovery (67 %). The mechanical recycling is done in order for the recycled material to re-enter an XPS production cycle.

3.2.2 Reuse, recovery and recycling potential (D)

In the case of POFIX XPS, D module accounts for: (i) benefits of recycling XPS after demolition in 10%, where it substitutes virgin polystyrene with a substitution factor of 0,7, where electricity for pre-processing is needed; (ii) the heat recovery of incineration of XPS in 67%; (iii) the heat recovery of incinerated packaging – foil and XPS spacers.

Packaging of the XPS panels is incinerated; the burdens of incineration are taken into account in module A5, which is not a part of our system boundaries; however benefits are included in module D, together with benefits of incineration and recycling of XPS.

4 LCA: Results

Table 3: Selected phases of the LCA

SYSTEM BOUNDARY																
PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY
Raw material supply	Transport	Production	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction / 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
☒	☒	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒

4.1 Indicators of environmental impacts

According to the standard EN 15804, the environmental impacts are presented with thirteen indicators (Table 4).

Table 4: Abbreviations and units of indicators of environmental impacts

Indicators of environmental impacts	Abbreviation	Unit
Global warming potential total	GWP-total	kg CO_2 eq.
Global warming potential fossil fuels	GWP-fossil	kg CO_2 eq.
Global warming potential biogenic	GWP-biogenic	kg CO_2 eq.
Global warming potential land use and land use change	GWP-luluc	kg CO_2 eq.
Depletion potential of the stratospheric ozone layer	ODP	kg CFC 11 eq.
Acidification potential, accumulated exceedance	AP	mol H^+ eq.
Eutrophication potential, fraction of nutrients reaching freshwater end compartment	EP-freshwater	kg PO_4^- eq.
Eutrophication potential, fraction of nutrients reaching marine end compartment	EP-marine	kg N eq.
Eutrophication potential, accumulated exceedance	EP-terrestrial	kg N eq.
Formation potential of tropospheric ozone	POCP	kg NMVOC eq.

Indicators of environmental impacts	Abbreviation	Unit
Abiotic depletion potential for non-fossil resources	APD-minerals&metals	kg Sb eq.
Abiotic depletion for fossil resources potential	APD-fossil	MJ, net calorific value
Water (user)m deprivation potential, deprivation-weighted water consumption	WDP	m^3 world eq.deprived

The results for the environmental impact indicators for 1m^3 of POFIX XPS are shown in Table 5.

Table 5: Indicators of environmental impacts

Core indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO_2 eq.]	8,76E+01	0,00E+00	9,06E-02	6,78E+01	1,00E-01	-6,04E+01
GWP-fossil	[kg CO_2 eq.]	8,72E+01	0,00E+00	9,02E-02	6,78E+01	1,03E-01	-6,02E+01
GWP-biogenic	[kg CO_2 eq.]	3,83E-01	0,00E+00	-1,20E-04	2,02E-03	-3,05E-03	-1,13E-01
GWP-luluc	[kg CO_2 eq.]	1,45E-02	0,00E+00	5,01E-04	1,02E-04	1,90E-04	-2,46E-03
ODP	[kg CFC 11 eq.]	3,46E-09	0,00E+00	5,38E-15	2,70E-12	2,42E-13	-2,03E-10
AP	[mol H^+ eq.]	2,69E-01	0,00E+00	8,55E-05	5,97E-03	7,30E-04	-3,69E-02
EP-freshwater	[kg PO_4 eq.]	2,76E-04	0,00E+00	2,68E-07	6,50E-07	1,75E-07	-2,04E-05
EP-marine	[kg N eq.]	5,29E-02	0,00E+00	2,66E-05	1,31E-03	1,87E-04	-1,06E-02
EP-terrestrial	[kg N eq.]	5,71E-01	0,00E+00	3,20E-04	2,81E-02	2,05E-03	-1,15E-01
POCP	[kg NMVOC eq.]	2,40E-01	0,00E+00	7,45E-05	3,86E-03	5,67E-04	-4,03E-02
APD-minerals &metals	[kg Sb eq.]	9,57E-06	0,00E+00	7,51E-09	7,38E-08	1,06E-08	-1,53E-05
APD-fossil	[MJ]	2,56E+03	0,00E+00	1,20E+00	7,48E+00	1,35E+00	-1,08E+03
WDP	[m^3 world eq. extracted]	1,71E+01	0,00E+00	8,06E-04	5,50E+00	1,13E-02	-3,61E-01

4.2 Indicators of raw material use

The results of the raw materials use indicators are in accordance with the standard EN 15804, shown with ten indicators (Table 6).

Table 6: Abbreviations and units of indicators of raw material use

Indicators of raw material use	Abbreviation	Unit
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	PERE	MJ, net calorific value
Use of renewable primary energy resources used as raw materials	PERM	MJ, net calorific value
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	PERT	MJ, net calorific value
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	PENRE	MJ, net calorific value
Use of non-renewable primary energy sources used as raw materials	PENRM	MJ, net calorific value
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	PENRT	MJ, net calorific value
Use of secondary materials	SM	kg
Use of renewable secondary fuels	RSF	MJ, net calorific value
Use of non-renewable secondary fuels	NRSF	MJ, net calorific value
Net use fresh water	FW	m^3

The results for Indicators of raw material use for 1m^3 of POFIX XPS are shown in Table 7.

Table 7: Indicators of raw material use

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	1,55E+02	0,00E+00	6,82E-02	1,74E+00	2,02E-01	-4,78E+00
PERM	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	[MJ]	1,55E+02	0,00E+00	6,82E-02	1,74E+00	2,02E-01	-4,78E+00
PENRE	[MJ]	2,56E+03	0,00E+00	1,20E+00	7,48E+00	1,35E+00	-1,08E+03
PENRM	[MJ]	9,45E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	[MJ]	2,56E+03	0,00E+00	1,20E+00	7,48E+00	1,35E+00	-1,08E+03
SM	[kg]	6,50E+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
NRSF	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	[m3]	4,70E-01	0,00E+00	7,72E-05	1,29E-01	3,43E-04	-1,22E-02

4.3 Other indicators of environmental impacts

According to the standard EN 15804, the results for the indicators of other environmental information (waste disposal data) are presented with three indicators, and the results of the output flows from the system are based on four indicators (Table 8).

Table 8: Abbreviations and units of other indicators of environmental impacts

Indicators for other environmental information	Abbreviation	Units
Hazardous waste disposal	HWD	kg
Non-hazardous waste disposal	NHWD	kg
Radioactive waste disposal	RWD	kg
Output flow indicators	Abbreviation	Units
Components for re-use	CRU	kg
Material for recycling	MFR	kg
Materials for energy recovery	MER	kg
Exported energy	EE	MJ per energy carrier

Results in indicators for other environmental information and output flow indicators for 1m^3 of POFIX XPS are shown in Table 9.

Table 9: Other indicators of environmental impacts

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	2,56E-02	0,00E+00	5,76E-12	6,92E-10	6,94E-11	-1,96E-03
NHWD	[kg]	1,31E+00	0,00E+00	1,72E-04	2,45E-01	6,91E+00	-2,19E-01
RWD	[kg]	5,20E-02	0,00E+00	1,48E-06	4,46E-04	1,50E-05	-1,57E-03
CRU	[kg]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MFR	[kg]	6,50E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	[kg]	1,70E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EE	[MJ]	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

4.4 Additional impact categories and indicators

According to the standard EN 15804, the results for additional impact categories and indicators are presented with six indicators (Table 10).

Table 10: Abbreviations and units of additional impact categories and indicators

Indicators for additional impact	Abbreviation	Unit
Potential incidence of disease due to PM emissions	PM	disease incidence
Potential human exposure efficiency relative to U235	IRP	kBq U235 equiv
Potential comparative toxic unit for ecosystems	ETP-fw	CTUe
Potential comparative toxic unit for humans-cancerogenic	HTP-c	CTUh
Potential comparative toxic unit for humans-non-cancerogenic	HTP-nc	CTUh
Potential soil quality index	SQP	-

Results for indicators for additional impact for 1m^3 of POFIX XPS are shown in Table 11.

Table 11: Additional impact

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PM	[disease incidence]	2,15E-06	0,00E+00	5,17E-10	3,51E-08	8,98E-09	-3,30E-07
IRP	[kBq U235 eq.]	2,15E+01	0,00E+00	2,17E-04	7,32E-02	1,67E-03	-1,22E+00
ETP-fw	[CTUe]	5,59E+03	0,00E+00	8,33E-01	3,47E+00	7,56E-01	-4,16E+02
HTP-c	[CTUh]	2,74E-08	0,00E+00	1,68E-11	3,70E-10	1,15E-10	-2,67E-08
HTP-nc	[CTUh]	1,05E-06	0,00E+00	8,69E-10	1,19E-08	1,28E-08	-3,49E-07
SQP	[-]	8,99E+01	0,00E+00	4,13E-01	2,25E+00	2,81E-01	-2,30E+00

Disclaimer 1 –IRP impact category deals mainly with the eventual impact of low dose ionizing radiation on the human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure or due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 – for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP the results shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

5 Interpretation of results

The product stage (i.e., modules A1-A3) contributes the most to the core environmental impacts of the considered panels - on average 90% throughout all the environmental impact categories in this set of parameters. Modules A4 (transport to the building site), A5 (installation in the building) B1-B7 (use of installed product) were not a part of this study. The end-of-life stage (modules C1-C4) contributes 44 % of the GWP – total and fossil impacts due to the process of incineration for heat recovery of the XPS. Benefits of this process are accounted for in module D. For other impact categories in the core environmental impacts, end-of-life stage contributes on average 1 % of all burdens. Potential environmental benefits have been calculated for module D, representing benefits and loads beyond the system boundary. The potential benefits are related to the recycling of XPS panels and to benefits of incineration for heat recovery. These potential environmental benefits are significant in all categories, with GWP, ADP-minerals&metals and ADP-fossil categories standing out the most (see Figure 3).

Regarding raw material use, it can be seen from the table, that the majority of the resources are used in the product stage (i.e., modules A1-A3). The other life cycle stages have minor influence on the consumption of resources. A potential environmental benefit has been calculated in benefits and loads beyond the system boundary stage (i.e., module D) for all considered raw material use impact categories, except PENRM.

Regarding waste and other output flows, the largest amount of non-hazardous waste (i.e., NHWD impact category) is disposed within the end-of-life stage (i.e. module C4). The hazardous waste and radioactive waste are mostly related with the production stage A1-A3. In the case of MFR, recycled XPS granulate has an impact in modules A1-A3. In the Material for energy recovery (MER), the XPS used in the incineration for the heat recovery affects this parameter. For CRU and EE there are no environmental impacts. A potential environmental benefit has been calculated for benefits and loads beyond the system boundary stage (i.e., module D) for all considered waste categories.

Regarding optional indicators for all life cycle stages assessed it can be seen that the largest impacts are caused within the product stage (i.e. modules A1-A3).

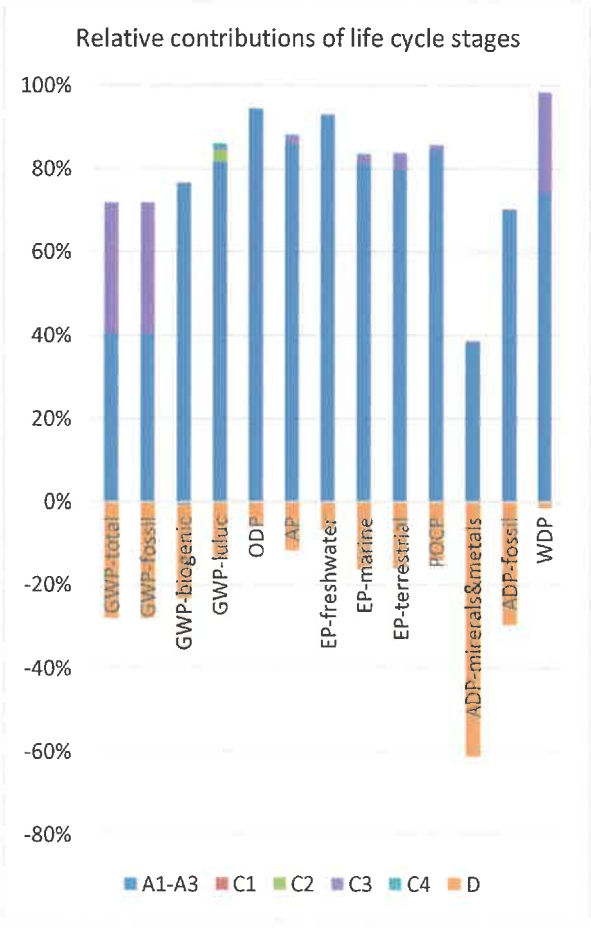

Figure 3: Relative contributions of all life cycle stages to the core environmental indicators

5.1 Contribution analysis

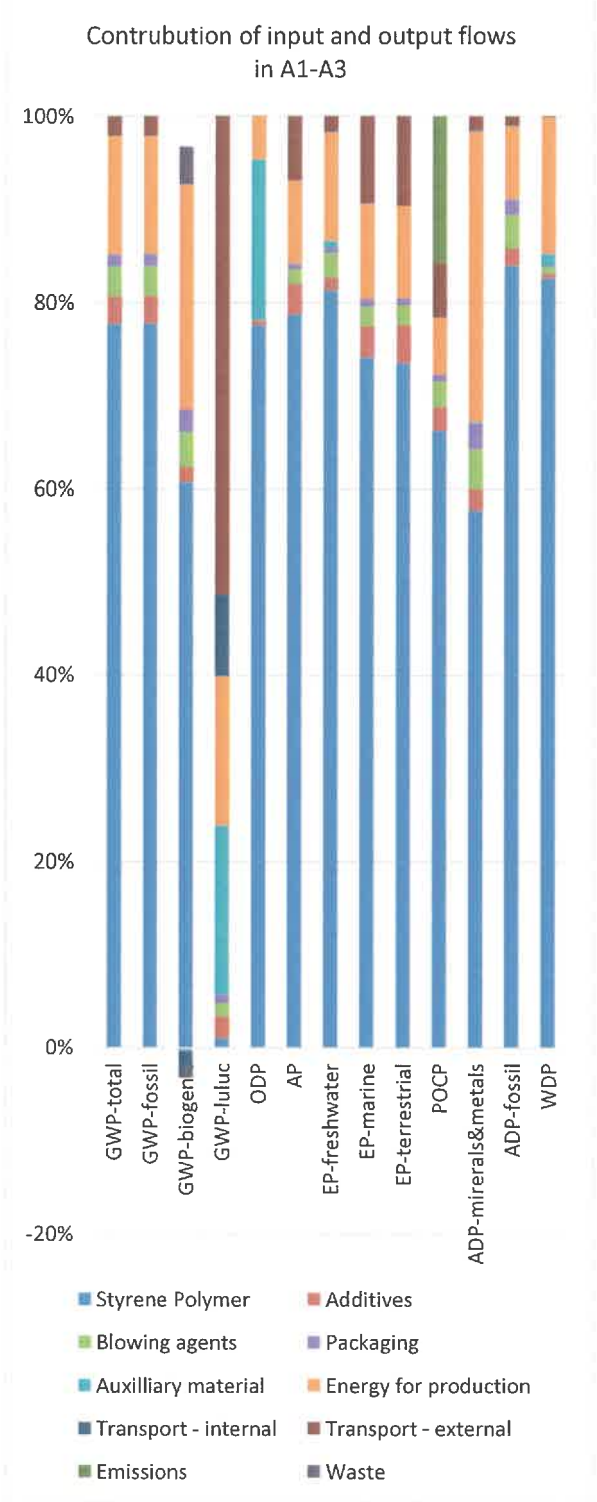

Figure 4: Contribution analysis for core environmental impacts of the product stage of POFIX XPS

Fugure 4 shows the relative contribution of different input materials to the environmental footprint for the production stage (i.e., modules A1-A3) per 1 m^3 of XPS panels. It can be seen that Styrene Polymer contributes the most to the environmental impacts in the product stage of POFIX XPS panels. Styrene Polymer also represents the largest percentage in mass of the material inputs to the assessed system.

In terms of climate change parameter (i.e., GWP-total - sum of GWP-fossil, GWP-biogenic and GWP-luluc), Styrene Polymer represents 77% of total parameter value. Electricity related to production represents further 13% of the GWP total parameter. The other 10% is distributed between other input or output materials/energy.

In case of impact on ODP, Styrene Polymer represents 77% of the total ODP value.

Terrestrial and marine eutrophication (EP) are mainly caused by Styrene Polymer again (81% of the total parameter value), followed by 12% of the value caused by electricity.

Acidification (AP) are mainly caused by Styrene Polymer (78% of the total parameter value), followed by electricity with 9%.

Photochemical Ozone Creation Potential (POCP) is also dominated by Styrene Polymer (66% of the total parameter value).The POCP parameter is influenced also by emissions from the A1-A3 in 16%, followed by electricity and transport with 6%.

Resource use, minerals and metals (i.e., ADP - minerals & metals) and resource use, energy carriers (ADP-fossil) are mainly dominated by the impact of Styrene Polymer (56% and 84% respectively), followed by electricity (31% or 8% respectively).

In terms of water scarcity (i.e., WDP), Styrene Polymer contributes the majority of the impact to this parameter (82%), followed by electricity for production (15%).

6 References

1. GaBi 10.6 modelling software
2. EN 15804:2012+A2:2019 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
3. EN ISO 14040:2006 Environmental management - Life cycle assessment - Principles and framework (EN ISO 14040:2006)
4. EN ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines (EN ISO 14044:2006)
5. EN ISO 14025:2010 Environmental labels and declarations - Type III environmental
6. Product Category Rules for Building-Related Products and Services - Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report according to EN 15804+A2:2019 version 1.0 (IBU)
7. Part B: Requirements on the EPD for Insulating materials made of foam plastics (ver 2019), which have been issued by the Institut Bauen und Umwelt e.V. (IBU).
8. Report No. 1027/22–520–1–EN: Life Cycle Assessment of POFIX XPS, dated 1. 3. 2023

The data specified in the EPD are calculated on the basis of the data provided by the manufacturer. In the event that the manufacturer's information is incorrect, calculations do not apply.