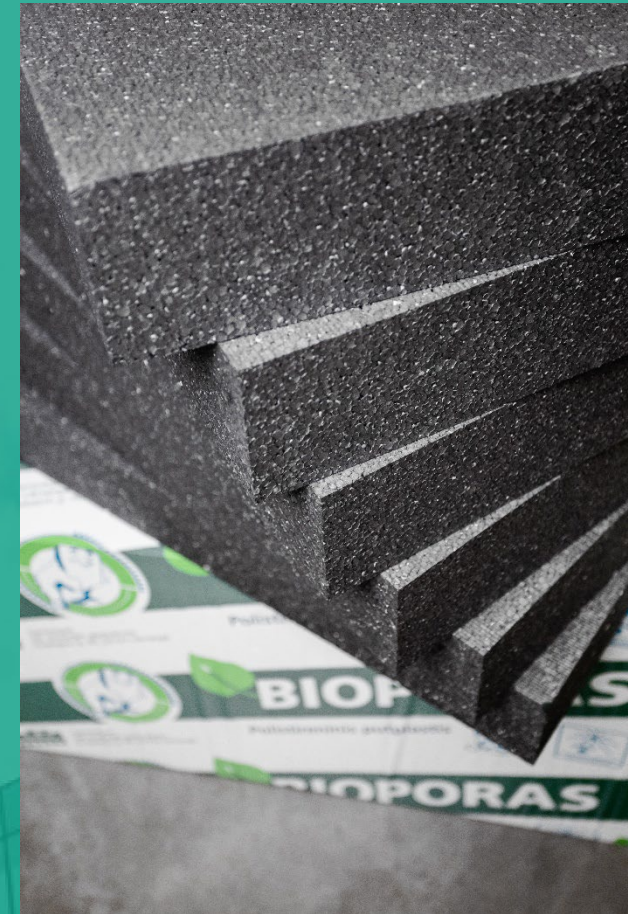


ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

**EXPANDED POLYSTYRENE
BOARDS “BIOPORAS”
BY
AB UKMERGĒS GELŽBETONIS**





GENERAL INFORMATION

MANUFACTURER INFORMATION

Manufacturer	AB Ukmergės gelžbetonis
Address	Antakalnio street 60, Ukmergė, LT-20144 Lithuania
Contact details	info@ug.lt
Website	www.ukmergesgelzbetonis.lt

PRODUCT IDENTIFICATION

Product name	Expanded Polystyrene boards
Additional label(s)	Bioporas EPS 70 Bioporas EPS 80
Place(s) of production	Lithuania
CPC code	369

The Building Information Foundation RTS sr

EPDs within the same product category but from different programmes may not be comparable.

Jukka Seppänen
RTS EPD Committee Secretary

Laura Apilo
Managing Director

EPD INFORMATION

The EPD owner has the sole ownership, liability, and responsibility for the EPD. Construction products EPDs may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

EPD program operator	The Building Information Foundation RTS sr.
EPD standards	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
Product category rules	The CEN standard EN 15804 serves as the core PCR. In addition, the RTS PCR (English version, 26.8.2020) is used.
EPD author	Sigita Židonienė, UAB Vesta Consulting, Bebrų str.1, Vilnius, Lithuania
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> External verification
Verification date	
EPD verifier	Anni Oviir, Rangi Maja OÜ - LCA Support www.lcasupport.com
EPD number	RTS_189_22
ECO Platform nr.	-
Publishing date	24.5.2022
EPD valid until	24.5.2027

PRODUCT INFORMATION

PRODUCT DESCRIPTION

This EPD covers expandable polystyrene boards made by AB Ukmergės gelžbetonis.

Expanded polystyrene board Bioporas is a grey insulation board made of lightweight, rigid, plastic foam produced from solid beads of polystyrene with polymer flame retardants (Polymer FR) and graphite particles infused into the cell structure. These thermal insulation boards are made of renewable raw materials such as bio-naphtha or biogas extracted from kitchen waste, which are certified in accordance with the /REDCert/ system.

The thermal conductivity of expanded polystyrene board Bioporas is 0.030 W/ (m·K). This EPD represents two types of products – Bioporas EPS 70 and Bioporas EPS 80.

PRODUCT APPLICATION

Thermal insulation boards Bioporas are suitable for use in many applications: residential, industrial, or commercial buildings, logistic centres, sports arenas, warehouses, power plants and other structures that require to install thermal insulation layer. The product described in this document is used in applications such as wall insulation, roof insulation, External Thermal Insulation Composite System (ETICS), cavity wall insulation, ceiling insulation.

TECHNICAL SPECIFICATIONS

Products are available in different sizes. Thickness can be from 50 mm till 500 mm, length – from 500 mm till 4000 mm, width from 500 mm till 1200 mm. As product is homogeneous, the results represent all available thicknesses. Other technical specifications are described below.

BIOPORAS EPS 70

Property	Values
Density	15.0 kg/m ³
Compressive stress at 10% deformation	≥70 (kPa)
Bending strength	≥115 (kPa)
Tensile strength	≥100 (kPa)
Thermal conductivity	0.030 W/(mK)

BIOPORAS EPS 80

Property	Values
Density	15.9 kg/m ³
Compressive stress at 10% deformation	≥80 (kPa)
Bending strength	≥125 (kPa)
Thermal conductivity	0.030 W/(mK)

PRODUCT STANDARDS

Polystyrene products are produced according to EN 13163 Thermal insulation products for buildings-factory made expanded polystyrene (EPS) products-Specification.

PHYSICAL PROPERTIES OF THE PRODUCT

Detailed physical information can be found at manufacturers web page <https://www.ukmergesgelzbetonis.lt>

ADDITIONAL TECHNICAL INFORMATION

REDcert² certificate approves that AB Ukmergės gelžbetonis complies with the requirements of the certification system REDcert². The inspection report documents that the requirements of the REDcert² certification system for the purpose of mass balanced products is fulfilled. Further information can be found at <https://www.ukmergesgelzbetonis.lt>.

PRODUCT RAW MATERIAL COMPOSITION

Product and Packaging Material	Weight, %	Country Region of origin
Polystyrene	87	EU
Graphite	5-7	EU & non-EU
Pentane	5-7	EU & non-EU
Flame retardant	1-2	EU & non-EU

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	0	
Minerals	5-7	EU & non-EU
Bio-based materials	94	EU

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

MANUFACTURING AND PACKAGING (A1-A3)

Production of thermal insulation boards Bioporas has a multi-stage production process. The granulate is initially produced at the supplier site, delivered, and followed by the foaming process at the company AB Ukmergės gelžbetonis located at Antakalnio street 60, Ukmergė LT-20144. The conversion process of EPS granulates to thermal insulation boards consists of the following manufacturing stages: pre-expanding of beads, intermediate storage of beads and production of EPS blocks, block cutting into sheets and packaging. During pre-expanding stage, beads are foamed with the aid of steam and the blowing agent pentane. Subsequently, the expanded beads are stored in air permeable silos. Thanks to the diffusing air during intermediate storage period, the EPS beads receive the necessary stability for further processing. The final shape is achieved by hot wire cutting of the block to give the desired board dimensions. Production scrap is 100% recycled during production.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

Annual export rates are taken into consideration for delivery scenario A4 (transportation to construction site).

This EPD does not cover installation module A5.

PRODUCT USE AND MAINTENANCE (B1-B7)

In normal use scenario, it is assumed that no maintenance (B2), repair (B3), replacement (B4) and refurbishment (B5) is needed. This EPD does not cover the use phase. Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

This stage includes the following modules:

C1: Deconstruction, dismantling, demolition

Consumption of fuel in demolition process is calculated according to transported mass. The environmental impacts of demolition correspond to the use of machinery, using a factor of 10 kWh per ton of material. The source of energy is diesel fuel used by work machines.

C2: Transport of the discarded product to the processing site

It is estimated that there is no mass loss during the use of the product, therefore the end-of-life product is assumed that it has the same weight with the declared product. All the end-of-life product is assumed to be sent to the closest facilities such as recycling and landfill. Transportation distance to the closest disposal area is estimated as 50 km and the transportation method is lorry which is the most common.

C3: Waste processing for reuse, recovery and/or recycling

As a general rule, construction techniques should be designed in such a way that it would be possible to separate insulation boards Bioporas at their end of life. Only this way recycling is possible. If building materials are sorted by type, the recycling of EPS waste to produce new EPS insulation boards is possible.

In this EPD the second option for end of life scenario for EPS boards was considered - incineration with energy recovery. Due to the high calorific value of polystyrene, energy embedded in the insulation boards can be reused in municipal waste incinerators equipped with energy recovery units for steam and electricity generation and for district heating. The material is assigned to waste code 17 06 04 in accordance with the /European Waste Catalogue/.

C4: Discharge (disposal)

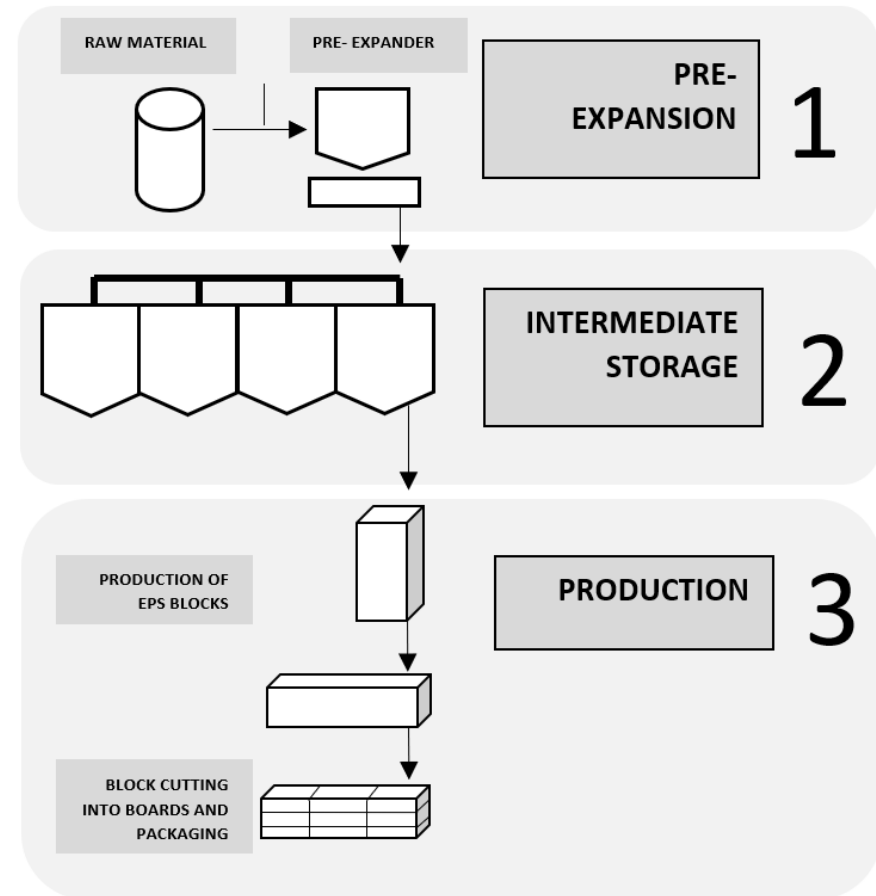
As the products are considered to be 100% collected for incineration, module C4 impact is zero.

Benefits and loads beyond the system boundary (D):

Module D considers the benefits of energy recovery which replaces district heat and electricity.

MANUFACTURING PROCESS

The manufacturing process:



LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

Period for data 2020 09 01 – 2021 08 31

DECLARED AND FUNCTIONAL UNIT

Declared unit	The declared unit is 1 m ³ of board
Mass per declared unit	15 kg for Bioporas EPS 70 15,9 kg for Bioporas EPS 80
Reference service life	If applied correctly, the lifetime of EPS insulation boards is equal to the building lifetime (usually without requiring any maintenance). Durability studies on applied EPS insulation boards show no loss of technical properties after 40 years.

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

	EPS70	EPS 80
Biogenic carbon content in product, kg C	13,20	14,00
Biogenic carbon content in packaging, kg C	-	-

SYSTEM BOUNDARY

This EPD covers the *cradle to gate with options* scope with following modules; A1 (Raw material supply), A2 (Transport), A3 (Manufacturing) and A4 (Transport) as well as C1 (Deconstruction), C2 (Transport at end-of-life), C3 (Waste processing) and C4 (Disposal). In addition, module D - benefits and loads beyond the system boundary is included.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	D	D
x	x	x	x	MND	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x	x	x
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012+A2:2019 and the applied RTS PCR. The study does not exclude any hazardous materials or substances.

The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation.

In this study, as per EN 15804, allocation is conducted in the following order:

1. Allocation should be avoided.
2. Allocation should be based on physical properties (e.g., mass, volume) when the difference in revenue is small.
3. Allocation should be based on economic values.

AB Ukmergės Gelžbetonis produces several kinds of products. The company has separate production line for EPS production: regular EPS and Bioporas EPS; since the production processes of these products are similar, the annual production percentages are taken into consideration for allocation. According to the ratio of the annual production of the declared product to the total annual production at the factory, the annual total energy consumption, packaging materials and the generated waste per the declared product are allocated.

Allocation used in Ecoinvent 3.6 environmental data sources follows the methodology 'allocation, cut-off by classification'. This methodology is in line with the requirements of the EN 15804 - standard.

This LCA study is conducted in accordance with all methodological considerations, such as performance, system boundaries, data

quality, allocation procedures, and decision rules to evaluate inputs and outputs. All estimations and assumptions are given below:

- Module A2, A4 & C2

Vehicle capacity utilization volume factor is assumed to be 1 which means full load. In reality, it may vary but as role of transportation emission in total results is small and so the variety in load is assumed to be negligible. Empty returns are not taken into account as it is assumed that return trip is used by transportation company to serve the needs of other clients.

- Module A4

Transportation doesn't cause losses as products are packaged properly. Also, volume capacity utilisation factor is assumed to be 1 for the nested packaged products. Additionally, transportation distances and vehicle types are assumed according to the exports in the last year.

- Module C1

Demolition is assumed to take 0,15 kWh/m³ for Bioporas 70 and 0,16 kWh/m³ for Bioporas 80. It is assumed that 100% of the waste is collected.

- Module C2

Transportation distance to the closest disposal area is estimated as 50 km and the transportation method is assumed as lorry which is the most common.

- Module C3



100% of the end-of-life product is assumed to be recovered to energy. According to the manufacturer's information, Module C3 includes the incineration of the product.

- Module C4

Module C4 impacts are zero as the products are considered to be 100 % collected for incineration.

- Module D

Module D considers the benefits of energy recovery which replaces district heat and electricity.

ENVIRONMENTAL IMPACT DATA

Environmental performance results are presented per declared unit, defined as 1 m³ of EPS insulation product.

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

BIOPORAS EPS 70

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP – total	kg CO ₂ e	-4,26E-01	5,00E-02	4,95E-02	6,82E-02	5,13E+01	0,00E+00	-4,58E+01
GWP – fossil	kg CO ₂ e	4,79E+01	5,00E-02	4,94E-02	6,82E-02	2,86E+00	0,00E+00	-2,74E+00
GWP – biogenic	kg CO ₂ e	-4,84E+01	3,70E-05	1,38E-05	4,95E-05	4,84E+01	0,00E+00	-4,30E+01
GWP – LULUC	kg CO ₂ e	4,41E-02	1,50E-05	4,18E-06	2,05E-05	9,80E-05	0,00E+00	-1,80E-03
Ozone depletion pot.	kg CFC-11e	1,19E-06	1,20E-08	1,07E-08	1,60E-08	4,30E-08	0,00E+00	-9,20E-06
Acidification potential	mol H ⁺ e	1,41E-01	2,10E-04	5,17E-04	2,86E-04	6,00E-03	0,00E+00	-4,70E-01
EP-freshwater ²⁾	kg Pe	1,71E-04	4,10E-07	2,00E-07	5,54E-07	4,90E-06	0,00E+00	-8,70E-05
EP-marine	kg Ne	4,55E-02	6,40E-05	2,28E-04	8,63E-05	2,80E-03	0,00E+00	-6,10E-02
EP-terrestrial	mol Ne	4,95E-01	7,10E-04	2,51E-03	9,53E-04	3,00E-02	0,00E+00	-6,20E-01
POCP (“smog”)	kg NMVOCe	1,39E-01	2,30E-04	6,89E-04	3,06E-04	7,30E-03	0,00E+00	-1,80E-01
ADP-minerals & metals	kg Sbe	5,76E-05	8,60E-07	7,55E-08	1,16E-06	7,80E-06	0,00E+00	-2,60E-05
ADP-fossil resources	MJ	7,70E+02	7,80E-01	6,81E-01	1,06E+00	4,25E+00	0,00E+00	-5,68E+02
Water use ¹⁾	m ³ e depr.	3,07E+00	2,90E-03	1,27E-03	3,94E-03	3,50E-01	0,00E+00	-6,03E+00

BIOPORAS EPS 80

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP – total	kg CO ₂ e	-7,84E-01	5,40E-02	5,30E-02	7,20E-02	5,43E+01	0,00E+00	-4,85E+01
GWP – fossil	kg CO ₂ e	5,05E+01	5,30E-02	5,30E-02	7,20E-02	3,03E+00	0,00E+00	-2,91E+00
GWP – biogenic	kg CO ₂ e	-5,13E+01	3,90E-05	1,50E-05	5,20E-05	5,13E+01	0,00E+00	-4,56E+01
GWP – LULUC	kg CO ₂ e	4,66E-02	1,60E-05	4,50E-06	2,20E-05	1,00E-04	0,00E+00	-2,00E-03
Ozone depletion pot.	kg CFC-11e	1,22E-06	1,30E-08	1,10E-08	1,70E-08	4,60E-08	0,00E+00	-9,70E-06
Acidification potential	mol H ⁺ e	1,49E-01	2,20E-04	5,50E-04	3,00E-04	6,30E-03	0,00E+00	-5,00E-01
EP-freshwater ²⁾	kg Pe	1,78E-04	4,30E-07	2,10E-07	5,90E-07	5,20E-06	0,00E+00	-9,20E-05
EP-marine	kg Ne	4,81E-02	6,80E-05	2,40E-04	9,10E-05	3,00E-03	0,00E+00	-6,40E-02
EP-terrestrial	mol Ne	5,23E-01	7,50E-04	2,70E-03	1,00E-03	3,20E-02	0,00E+00	-6,60E-01
POCP (“smog”)	kg NMVOCe	1,47E-01	2,40E-04	7,30E-04	3,20E-04	7,70E-03	0,00E+00	-1,90E-01
ADP-minerals & metals	kg Sbe	6,00E-05	9,10E-07	8,10E-08	1,20E-06	8,30E-06	0,00E+00	-2,80E-05
ADP-fossil resources	MJ	8,10E+02	8,30E-01	7,30E-01	1,12E+00	4,51E+00	0,00E+00	-6,02E+02
Water use ¹⁾	m ³ e depr.	3,20E+00	3,10E-03	1,40E-03	4,20E-03	3,80E-01	0,00E+00	-6,39E+00

GWP = Global Warming Potential; EP = Eutrophication potential. EN 15804+A2 disclaimer for Abiotic depletion and Water use indicators and all optional indicators except Particulate matter and Ionizing radiation. human health: The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator. Eutrophication aquatic freshwater is calculated and reported as kg P-eq. as the referenced characterisation in EN 15804+A2 requires. Multiply by 3.07 to get PO₄e.

USE OF NATURAL RESOURCES

BIOPORAS EPS 70

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Renew. PER as energy	MJ	1,37E+03	9,90E-03	3,70E-03	1,30E-02	3,79E+00	0,00E+00	-7,45E+02
Renew. PER as material	MJ	7,43E+02	0,00E+00	0,00E+00	0,00E+00	-7,43E+02	0,00E+00	0,00E+00
Total use of renew. PER	MJ	2,12E+03	9,90E-03	3,70E-03	1,30E-02	-7,39E+02	0,00E+00	-7,45E+02
Non-re. PER as energy	MJ	7,54E+02	7,80E-01	6,80E-01	1,06E+00	5,50E-01	0,00E+00	-5,68E+02
Non-re. PER as material	MJ	1,72E+01	0,00E+00	0,00E+00	0,00E+00	1,72E+01	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	7,72E+02	7,80E-01	6,80E-01	1,06E+00	1,78E+01	0,00E+00	-5,68E+02
Secondary materials	kg	1,41E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Renew. secondary fuels	MJ	6,62E-16	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-ren. secondary fuels	MJ	8,97E-15	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	1,74E-01	1,60E-04	6,00E-05	2,20E-04	1,90E-02	0,00E+00	-6,90E-02

BIOPORAS EPS 80

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Renew. PER as energy	MJ	1,46E+03	1,00E-02	3,90E-03	1,40E-02	1,00E-01	0,00E+00	-7,89E+02
Renew. PER as material	MJ	7,87E+02	0,00E+00	0,00E+00	0,00E+00	-7,87E+02	0,00E+00	0,00E+00
Total use of renew. PER	MJ	2,25E+03	1,00E-02	3,90E-03	1,40E-02	-7,87E+02	0,00E+00	-7,89E+02
Non-re. PER as energy	MJ	7,95E+02	8,30E-01	7,30E-01	1,12E+00	4,51E+00	0,00E+00	-6,02E+02
Non-re. PER as material	MJ	1,72E+01	0,00E+00	0,00E+00	0,00E+00	1,72E+01	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	8,12E+02	8,30E-01	7,30E-01	1,12E+00	4,51E+00	0,00E+00	-6,02E+02
Secondary materials	kg	1,50E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Renew. secondary fuels	MJ	7,01E-16	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-ren. secondary fuels	MJ	9,51E-15	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	1,85E-01	1,70E-04	6,40E-05	2,30E-04	2,00E-02	0,00E+00	-7,30E-02

PER abbreviation stands for primary energy resources

END OF LIFE – WASTE

BIOPORAS EPS 70

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Hazardous waste	kg	9.90E-02	7.60E-04	7.30E-04	1.00E-03	0.00E+00	0.00E+00	-2,00E-01
Non-hazardous waste	kg	5.93E+00	8.40E-02	7.80E-03	1.10E-01	0.00E+00	0.00E+00	-2,76E+00
Radioactive waste	kg	2.36E-02	5.40E-06	4.80E-06	7.30E-06	0.00E+00	0.00E+00	-4,10E-03

BIOPORAS EPS 80

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Hazardous waste	kg	1.01E-01	8.10E-04	7.80E-04	1.10E-03	0.00E+00	0.00E+00	-2,10E-01
Non-hazardous waste	kg	6.17E+00	8.90E-02	8.30E-03	1.20E-01	0.00E+00	0.00E+00	-2,93E+00
Radioactive waste	kg	2.50E-02	5.70E-06	5.10E-06	7.70E-06	0.00E+00	0.00E+00	-4,40E-03

END OF LIFE – OUTPUT FLOWS

BIOPORAS EPS 70

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	2.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy rec	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.50E+01	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

BIOPORAS EPS 80

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	2.00E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy rec	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.59E+01	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

KEY INFORMATION TABLE – KEY INFORMATION PER KG OF PRODUCT

BIOPORAS EPS 70

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP – total	kg CO ₂ e	-2,84E-02	3,33E-03	3,30E-03	4,55E-03	3,42E+00	0,00E+00	-3,05E+00
ADP-minerals & metals	kg Sbe	3,84E-06	5,73E-08	5,03E-09	7,73E-08	5,20E-07	0,00E+00	-1,73E-06
ADP-fossil	MJ	5,13E+01	5,20E-02	4,54E-02	7,07E-02	2,83E-01	0,00E+00	-3,79E+01
Water use	m ³ e depr.	2,04E-01	1,93E-04	8,47E-05	2,63E-04	2,33E-02	0,00E+00	-4,02E-01
Secondary materials	kg	9,40E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Biog. C in product	kg C	8,80E-01	N/A	N/A	N/A	N/A	N/A	N/A
Biog. C in packaging	kg C	0,00E+00	N/A	N/A	N/A	N/A	N/A	N/A

BIOPORAS EPS 80

Impact category	Unit	A1-A3	A4	C1	C2	C3	C4	D
GWP – total	kg CO ₂ e	-4,93E-02	3,40E-03	3,33E-03	4,53E-03	3,42E+00	0,00E+00	-3,05E+00
ADP-minerals & metals	kg Sbe	3,78E-06	5,72E-08	5,09E-09	7,55E-08	5,22E-07	0,00E+00	-1,76E-06
ADP-fossil	MJ	5,10E+01	5,22E-02	4,59E-02	7,04E-02	2,84E-01	0,00E+00	-3,79E+01
Water use	m ³ e depr.	2,01E-01	1,95E-04	8,81E-05	2,64E-04	2,39E-02	0,00E+00	-4,02E-01
Secondary materials	kg	8,70E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Biog. C in product	kg C	8,80E-01	N/A	N/A	N/A	N/A	N/A	N/A
Biog. C in packaging	kg C	0,00E+00	N/A	N/A	N/A	N/A	N/A	N/A

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity production, hydro, run-of-river (Reference product: electricity, high voltage). Lithuania. Ecoinvent 3.6. year: 2019
Electricity (hydro) CO _{2e} / kWh	0,0039
Electricity data source and quality	Electricity production, wind, >3mw turbine, onshore (Reference product: electricity, high voltage) Lithuania. Ecoinvent 3.6.
Electricity (wind) CO _{2e} / kWh	0,0199
Electricity data source and quality	Electricity production, photovoltaic, 3kwp slanted-roof installation, multi-si, panel, mounted (Reference product: electricity, low voltage) Lithuania. Ecoinvent 3.6.
Electricity (photovoltaic) CO _{2e} / kWh	0,0903
Electricity data source and quality	Heat and power co-generation, wood chips, 6667 kw (Reference product: electricity, high voltage) Lithuania. Ecoinvent 3.6.
Electricity (biomass) CO _{2e} / kWh	0,0641
District heating data source and quality	Heat and power co-generation, natural gas, combined cycle power plant, 400mw electrical (Reference product: heat, district or industrial, natural gas) Lithuania. Ecoinvent 3.6.
District heating CO _{2e} / MJ	0,0246

Transport scenario documentation (A4)

Scenario parameter	Value
Specific transport CO _{2e} emissions, kg CO _{2e} / tkm	0,0901
Average transport distance, km	37
Capacity utilization (including empty return) %	56
Bulk density of transported products	
Bioporos EPS 70, m ³	1195
Bioporos EPS 80, m ³	1127

End of life scenario documentation

Scenario parameter	Value EPS70	Value EPS80
Collection process – kg collected separately	15	15,9
Collection process – kg collected with mixed waste	0	0
Recovery process – kg for re-use	0	0
Recovery process – kg for recycling	0	0
Recovery process – kg for energy	15	15,9
Disposal (total) – kg for final deposition	0	0
Scenario assumptions e.g. transportation	End-of-life product is transported 50 km with an average lorry	



BIBLIOGRAPHY

ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations. Principles and procedures.

ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.

ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.

Ecoinvent database v3.6 (2019) and One Click LCA database.

EN 15804:2012+A2:2019 Sustainability in construction works – Environmental product declarations – Core rules for the product category of construction products.

RTS PCR (English version, 26.8.2020)

Expanded Polystyrene boards (EPS) LCA background report
17.03.2022

ABOUT THE MANUFACTURER

The company AB Ukmergės gelžbetonis was founded in 1958, and the expanded polystyrene production department was opened in 1996. The mission of the company is to be an attractive and valuable partner in a construction business by supplying safe and high-quality products and services at a competitive price. The vision of the company is to be known and appreciated in the construction market as a reliable and professional company. The company has implemented quality management in accordance with the standard requirements of LST EN ISO 9001: 2015 and environmental management standards in accordance with the requirements of LST EN ISO 14001: 2015.

EPD AUTHOR AND CONTRIBUTORS

Manufacturer	AB Ukmergės gelžbetonis
EPD author	Sigita Židoniene, UAB Vesta Consulting, Bebrų str.1, Vilnius, Lithuania
EPD verifier	Anni Oviir, Rangi Maja OÜ - LCA Support www.lcasupport.com
EPD program operator	The Building Information Foundation RTS sr
Background data	This EPD is based on Neopor F 5200 Plus BMB LCIA report, Ecoinvent 3.6 (cut-off) and One Click LCA databases.
LCA software	The LCA and EPD have been created using One Click LCA tool.



VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with EN 15804, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The background report (project report) for this EPD

Why does verification transparency matter? [Read more online.](#)

VERIFICATION OVERVIEW

Following independent third party has verified this specific EPD:

EPD verification information	Answer
Independent EPD verifier	Anni Oviir
EPD verification started on	17 March 2022
EPD verification completed on	14 April 2022
Approver of the EPD verifier	The Building Information Foundation RTS sr

Author	Answer
EPD author	Sigita Židonienė

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of

- the data collected and used in the LCA calculations,
- the way the LCA-based calculations have been carried out,
- the presentation of environmental data in the EPD, and
- other additional environmental information, as present

with respect to the procedural and methodological requirements in ISO 14025:2010 and EN 15804:2012+A2:2019.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Signature,

Anni Oviir