Łukasiewicz
Institute of Ceramics
and Building Materials

CREATON

ENVIRONMENTAL PRODUCT DECLARATION

No. 02-05/2025

CEMENT ROOF TILES

CREATON Polska Sp. z o.o.

1.

Owner of the declaration:	*CREATON Polska Sp. zo.o.*
Programm owner:	*Łukasiewicz Research Network – Institute of Ceramics and Building Materials*
Program name:	*Environmental product declaration*
Data of issue:	*13.05.2025*
Declaration valid until:	*13.05.2030*

Łukasiewicz
Instytut Ceramiki
i Materiałów Budowlanych

ENVIRONMENTAL PRODUCT DECLARATION
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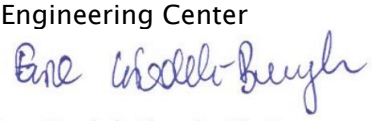
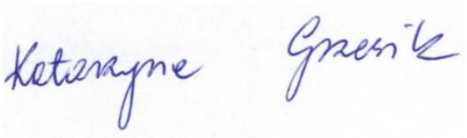
CREATON

1. GENERAL INFORMATION

Product of declaration:	Cement roof tiles: **GÖTEBORG, HEIDELBERG, KAPSTADT, KIOTO**
Program owner: Łukasiewicz Research Network– Institute of Ceramics and Building Materials Environmental Engineering Center in Opole. **http://www.icimb.pl/opole/**	**Declaration owner:** CREATON Polska Sp. z o.o. Wspólna 6 str., 32-300 Olkusz Telephone: +48 32 624 95 00 Address: biuro@creaton.com **www.creaton.pl**
Declared unit:	**1 kg**
Date of issue:	13.05.2025
Declaration valid until:	13.05.2030
Life Cycle Analysis (LCA):	A1-A3, A4, A5, C1-C4 and D according to PN-EN 15804+A2 (Cradle-to-Gate with options)
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.
Representatives:	Polish product, year 2024
Declared durability:	No declared product durability
Reasons for performing LCA:	B2B
Standard of product	EN 490:2011
Declarations that are the result of different programs or are not performed in accordance with the standard may not be comparable.	
The Łukasiewicz – Institute of Ceramics and Building Materials Environmental Engineering Center provides access to the Type III environmental declaration for cement roof tiles to interested parties.	
The declaration owner is responsible for the information and the base evidence. Łukasiewicz Research Network - Institute of Ceramics and Building Materials Center for Environmental Engineering is not responsible for the manufacturer's information and data and evidence regarding the life cycle assessment.	
Authors' team: Katarzyna Kiprian, M.Sc. Ewa Głodek-Bucyk, Ph.D. Patryk Okoń, M.Sc. **Approved:**  Joanna Poluszyńska, PhD Director of the 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. MANUFACTURER AND PRODUCT INFORMATION

CREATON Polska Sp. z o.o. operates two cement roof tile production plants located in Olkusz and Chojnice, as well as the most modern ceramic roof tile factory in Europe, located in Widziszew.

The cement roof tile factory in Olkusz was launched on June 23, 1999. The plant occupies an area of approximately 4 hectares and was established on the site of an old mine. At the time of its completion, it was the most modern facility of its kind in Europe. It was equipped with, among other things, an automated cement roof tile production line.
Three models of cement roof tiles are produced in Olkusz: **KAPSTADT**, **GÖTEBORG**, and **HEIDELBERG**.

CREATON's second cement roof tile factory was officially opened on June 5, 2009, in Chojnice. The new facility was equipped with two automated production lines. The first batch of tiles— **GÖTEBORG** —came off the production line on February 12, 2009.
Three models of cement roof tiles are produced at the Chojnice plant: **GÖTEBORG**, **HEIDELBERG**, and a new addition — **KIOTO**.

The third plant owned by CREATON Polska is a ceramic roof tile factory, officially opened on September 19, 2012. Located in the town of Widziszewo, it is the largest and most modern facility of its kind in all of Europe. The location was chosen due to the presence of high-quality clay deposits beneath Widziszewo.
The factory features one of the longest kilns in the world, measuring 215 meters in length. Thanks to modern, automated production lines, the facility is capable of meeting even the highest demand.
The Widziszewo plant manufactures ceramic roof tiles: **TITANIA**, **SIMPLA**, **KODA**, and **MAXIMA PRO**.

The product group covered by the declaration includes cement roof tiles:

- **GÖTEBORG,**
- **HEIDELBERG,**
- **KAPSTADT,**
- **KIOTO**.

The indicative composition of the products covered by the declaration is given in the table below. The percentage share depends on the type of product.

Table 1 Indicative composition of the products covered by the declaration

Material	Mass fraction [%]
Cement	18-24
Aggregate	67-73
Additives	3-6
Admixture	0-1
Water	6-8

These raw materials form a homogeneous mass, which serves as the input material for the next stage of the process, which is the shaping of cement tiles. This takes place in a forming machine, which produces a strand of the cement mixture precisely cut into individual pieces (tiles). In the next stage, the first layer of coating is applied. The coated tiles are then transported to a curing room, where the conditions ensure proper curing, promoting rapid mechanical strength development of the shaped tiles. After curing, the tiles leave the curing room and are coated with an additional layer of coating. The following stage involves marking the products and applying a separator layer that protects the tiles during packaging and transport. Once the applied coating has dried, the tiles are stacked into bundles and packaged using foil. The resulting bundles of cement tiles are then placed on wooden pallets located in the storage yard.

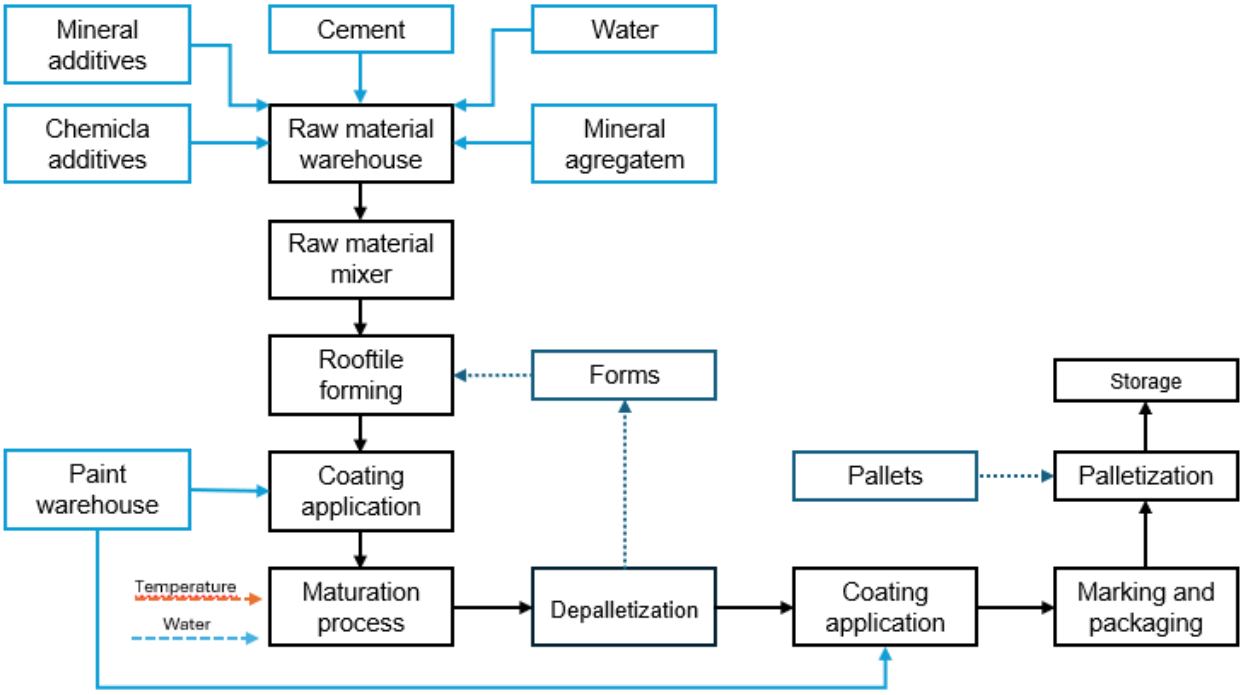


Figure 1: Production diagram of cement roof tiles manufactured by CREATON Polska Sp. z o.o. at the production plant in Olkusz and Chojnice.

GÖTEBORG

The shape inspired by the classic S-tile makes the GÖTEBORG cement roof tile a timeless and universal solution. It is perfectly suited for the roof of a traditionally shaped building, making it an ideal choice for lovers of always-fashionable elegance. Thanks to numerous design features, GÖTEBORG is highly durable and resistant to weather conditions. Perfectly matched accessories and system solutions form a complete system with the GÖTEBORG base tile. They provide protection, safety, and excellent functionality, harmonizing perfectly in both color and style.

HEIDELBERG

The HEIDELBERG cement roof tile features a shape inspired by the centuries-old monk-nun tile design. Thanks to modern production technology, this classic form has been enhanced with numerous structural solutions that ensure excellent performance characteristics. The product offers high resistance to weather conditions and frost. HEIDELBERG is a tile whose timeless shape highlights the enduring beauty of the roof.
The HEIDELBERG system solution range includes various accessories that provide outstanding roof durability and functionality. A wide selection of high-quality products—functional cement tiles, roof vents, snow protection systems, and roof access solutions—perfectly complement one another in both appearance and style.

KAPSTADT

The KAPSTADT roof tile stands out with its fashionable, modern shape. Its perfectly flat form aligns with current architectural trends. It ensures a tight roof covering without visible dividing lines, creating a smooth and uniform surface texture. It is non-combustible and resistant to harmful external factors, including rapid temperature changes. KAPSTADT is an excellent choice for enthusiasts of minimalist design.
Thanks to numerous structural solutions, the product boasts exceptional durability. The base tile, together with functional tiles and a wide range of accessories, forms a complete roofing system. All components—from roof tiles to snow guards and chimney steps—harmonize perfectly in terms of design and color.

KIOTO

The KIOTO concrete roof tile represents a new standard on the market – a unique and stylish alternative to the traditional flat tile. Innovative in design and crafted with passion and utmost precision, it impresses in every aspect. KIOTO is a symbol of modernity, perfectly meeting the demands of contemporary architecture.
Every detail of the tile is carefully designed, creating a cohesive and flawless whole. Here, aesthetics meet functionality, and minimalism intertwines with elegance. Easy to install, KIOTO creates a perfectly arranged, harmonious pattern on the roof surface. The precisely matched tiles form a tight barrier against weather conditions.

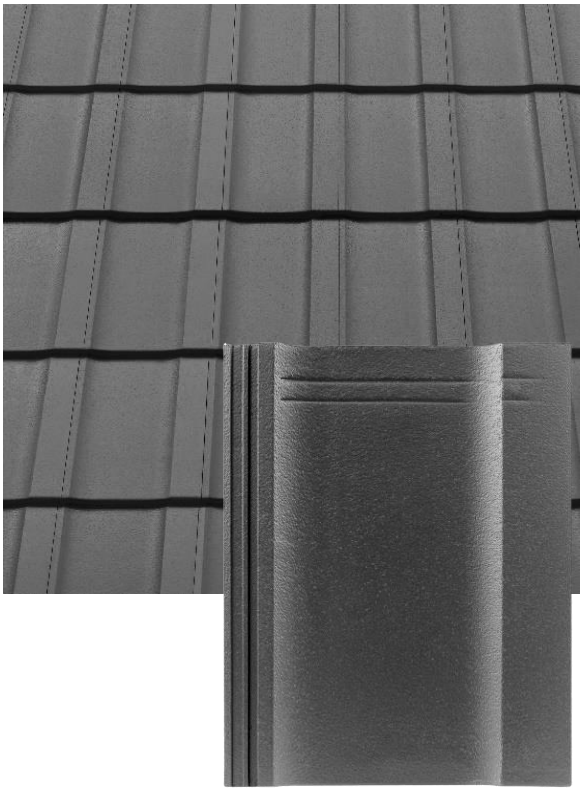


Table 2. Properties and Key Specifications of CREATON Cement Roof Tiles

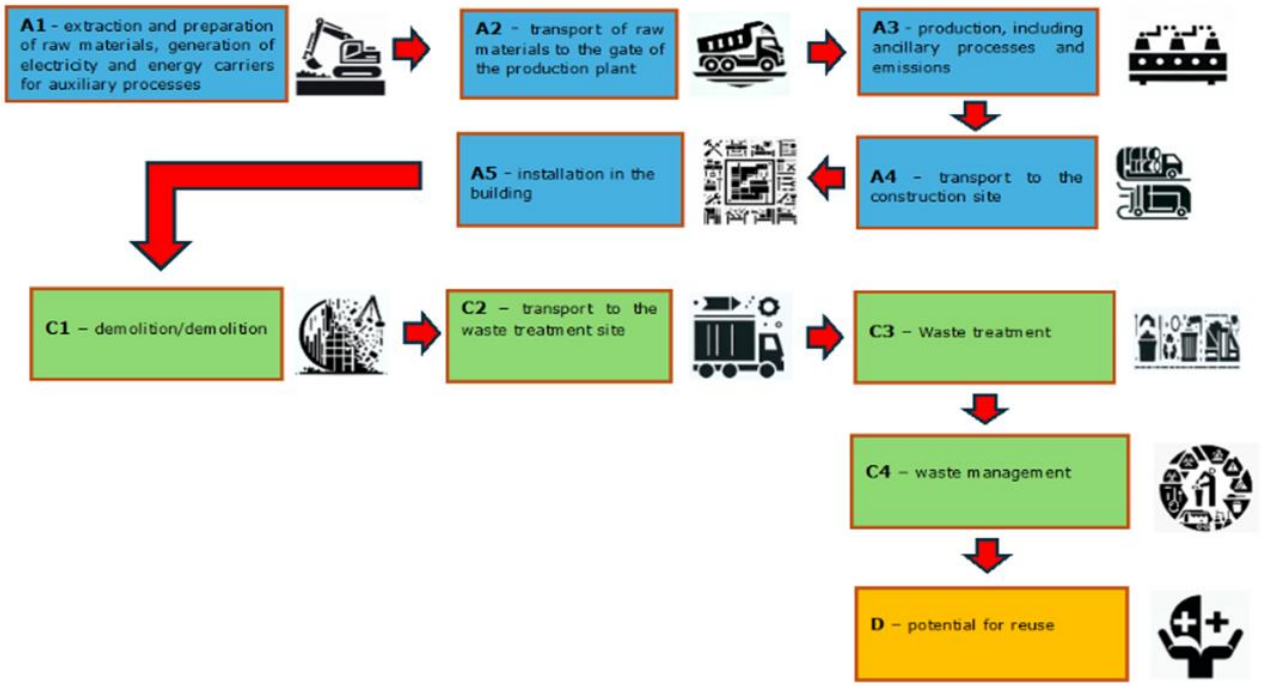
Parameter	Göteborg	Heidelberg	Kapstadt	Kioto
Length [mm]	420	420	420	420
Hanging length	400	400	394	394
Width [mm]	334	334	334	334
Cover width [mm]	300	300	300	300
Weight [kg]	4,6	4,3	4,9	5,1
Mechanical strength [N]	2800	3600	2000	2400
Density [g/cm^3]	2,1	2,1	2,1	2,1
Water absorption [%]	≤ 7,5%	≤ 7,5%	≤ 7,5%	≤ 7,5%

3. LCA: CALCULATION RULES

The environmental declaration is based on data provided by the declaration owner, CREATON Polska Sp. z o.o., for the production plants located in Olkusz and Chojnice.

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.



Data colleration period

Data on the production process were provided in 2024 for the period 01.01.2024 - 31.12.2024 (12 months) and correspond to the production technology of the time. The EPD is declared as the average environmental performance for the total production of cement roof tiles: GÖTEBORG, HEIDELBERG, KAPSTADT, and KIOTO manufactured at the production plants of CREATON Polska Sp. z o.o. in Olkusz and Chojnice.

Declared unit

1 kg

Assumptions

A1 – extraction and consumption of raw materials refers to specific mass shares in the production process, per unit declared of the product,
A2 – distances from the place of obtaining raw materials to the production plant individual for each raw material, means of transport differentiated due to the method of delivery of raw materials,
A3 – CO_2, NO_x, SO_2 and dust emission values from the production process obtained as a result of estimation based on fuel consumption,
A4 – refers to the transport of the final product to the construction site and is treated as average weight-based transport values to customers.
A5 – energy and raw material consumption in this module has been omitted due to its negligible values.
C1 - describes the handling of cement roof tiles during disassembly/demolition. Calculations are made on the basis of the developed scenario,

C2 – refers to the transport of construction waste to a recovery or disposal plant. Calculations are made on the basis of the developed scenario,
C3 – takes into account the environmental impact during the processing of demolition waste containing elements of cement roof tiles, at the waste recovery plant. Calculations are made on the basis of the developed scenario,
C4 – takes into account the environmental impact of storage and recycling of cement roof tiles. Calculations are made on the basis of the developed scenario,
D – refers to the impact and effects of the use of secondary material. The calculations are performed based on the developed scenario.

Cut-off criteria

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

General data

The data for the calculations come from Ecoinvent v. 3.10 and have been supplemented with KOBiZE *CO_2, SO_2, NO_x, CO and total particulate matter emission factors for electricity, December 2024.*
Emission factors for electricity were determined using the actual KOBiZE data. The Polish electricity emission factor used (Ecoinvent supplemented with current national data from KOBiZE) is 0.597 kg CO_2/kWh. A detailed analysis of data quality was part of an external audit.

Allocation

All data on components manufactured at the plant were provided by the owner of the declaration, CREATON Polska Sp. z o.o and were referred to the declared unit of the product – 1 kg. The allocation rules used in this EPD are based on the general ICIMB-PCR A principles.

4. LCA: SCENARIOS AND ADDITTIONAL TECHNICAL INFORMATION

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

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

Module A4 – Transport to construction site – Transport is carried out using trucks with a load capacity of 16–32 tonnes that meet EURO 6 emission standards. The average distance from the plant to the customer is 100 km (data provided by the customer). Calculations assume 100% load capacity.

Module A5 – Installation – Manual installation. Energy and raw material consumption in this module has been omitted due to negligible values. Emissions from packaging transport have been taken into account.

Module C1 - Demolition/Demolition – Manual demolition and initial sorting of waste 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 from the insulating glass separation are sent to the waste treatment plant. The modulus is zero.

Module C2 – Transport – 100% of waste originating from demolition (code 17 01 01 – construction debris) is transported to a recycling facility. Transport is carried out using trucks with a load capacity of 16–32 tons, compliant with EURO 6 emission standards. The average transport distance is 100 km.

Module C3 – Waste treatment – According to national practice, cement roof tiles at the end of their service life are treated as construction waste, classified as rubble. Due to their suitability as secondary aggregate, this waste is directed to recycling. It is assumed that all waste is sent to a processing facility, where it undergoes mechanical recovery processes. The electricity consumption is 0.03 kWh per kilogram of waste, and fuel consumption is 0.315 MJ per kilogram. The following processes were assumed for calculations: unloading (using a loader) and crushing (using a crusher).

Module C4 – Waste management - This module should consider the environmental impact of landfilled construction rubble containing cement roof tiles. In the developed scenario, landfilling operations are not taken into account. Construction waste, including rubble, can be recovered and recycled, enabling the reuse of materials, reducing waste generation, and minimizing environmental impact. This approach aligns with the principles of sustainable development and efficient resource management. It is assumed that only packaging waste generated during assembly (module A5), which cannot be reused in any other way, is sent to the landfill (10% packaging film and 5% paper/cardboard). The remaining packaging waste is subject to recycling and incineration.

Module D – Material reuse potential – It is assumed that 100% of the product is recyclable. Additionally, environmental benefits resulting from energy recovery through the incineration of packaging waste (such as foil or paper), which was collected from the construction site after roof tile installation (in accordance with data from Module A5), have been included.

5. LCA: RESULTS

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

SYSTEM BOUNDARIES (X –MODULE INCLUDED IN LCA, MND – MODULE NOT DECLARED)																
Products stage			**Construction process stage**		**Use stage**							**End-of-life stage**				**Benefits and loads beyond the system boundary**
Raw material supply	Transport	Production	Transport	Construction process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction	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
X	X	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 cement roof tiles. Explanations of the abbreviations used to describe the impact category are provided below:

GWP-total	Global warming potential
GWP-fossil	Global warming potential fossil fuel
GWP-biogenic	Global warming potential biogenic
GWP-luluc	Global warming potential land use and land change
ODP	Depletion potential of the stratospheric ozone layer
AP	Acidification potential of land and water
EP-freshwater	Eutrophication potential, fraction of nutrients reaching freshwater end compartment
EP-marine	Eutrophication potential, fraction of nutrients reaching marine end compartment
EP-terrestial	Eutrophication potential, Accumulated Exceedance
POCP	Formation potential of tropospheric ozone photochemical oxidants
ADP-minerals&metals	Abiotic depletion potential for nonfossil resources
ADP-fossil	Abiotic depletion potential for fossil resources
WDP	Water (user) deprivation potential
PM	Potential incidence of disease due to PM emissions
IRP	Potential Human exposure efficiency relative to U235
ETP-fw	Potential comparative Toxic Unit for ecosystems
HTP-c	Potential comparative Toxic Unit for humans (cancerogenic)
HTP-nc	Potential comparative Toxic Unit for humans (non-cancerogenic)
SQP	Potential soil quality index
PERE	Use of renewable primary energy excluding renewable primary energy resources used as raw materials
PERM	Use of renewable primary energy resources used as raw materials
PERT	Total use of renewable primary energy resources
PEN-RE	Use of non-renewable primary energy resources excluding non-renewable primary energy resources used as raw materials
RE	Use of non-renewable primary energy resources used as raw materials
PENRT	Total use of non-renewable primary energy resources
SM	Use of secondary material
RSF	Use of renewable fuels
NRSF	Use of non-renewable secondary fuels
FW	Use of net fresh water

MAIN IMPACT INDICATORS: 1 kg CREATON cement roof tiles

		Life Cycle Stage									
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	3,52E-01	2,25E-02	8,85E-03	1,90E-02	3,42E-05	0,00E+00	1,90E-02	5,32E-02	2,77E-07	-2,32E-02
GWP-fossil	kg CO_2 eq.	3,49E-01	2,25E-02	3,15E-02	1,90E-02	3,42E-05	0,00E+00	1,90E-02	5,31E-02	2,76E-07	-2,31E-02
GWP-biogenic	kg CO_2 eq.	-4,82E-03	1,56E-05	-2,27E-02	1,32E-05	2,37E-08	0,00E+00	1,32E-05	7,81E-05	7,31E-10	-9,23E-05
GWP-luluc	kg CO_2 eq.	8,19E-03	7,48E-06	4,77E-05	6,31E-06	1,13E-08	0,00E+00	6,31E-06	3,34E-05	2,87E-11	-1,09E-05
ODP	kg CFC11 eq.	6,45E-09	4,48E-10	2,21E-09	3,78E-10	6,80E-13	0,00E+00	3,78E-10	5,18E-10	4,26E-15	-9,15E-11
AP	mol H+ eq.	1,85E-03	4,69E-05	1,24E-04	3,96E-05	7,12E-08	0,00E+00	3,96E-05	3,76E-04	2,44E-09	-1,38E-04
EP-freshwater	kg P eq.	1,00E-04	1,53E-06	2,17E-05	1,29E-06	2,32E-09	0,00E+00	1,29E-06	2,59E-05	8,15E-12	-1,14E-05
EP-marine	kg N eq.	3,11E-04	1,12E-05	2,87E-05	9,51E-06	1,71E-08	0,00E+00	9,51E-06	1,49E-04	1,13E-09	-1,93E-05
EP-terrestrial	mol N eq.	2,71E-03	1,21E-04	2,76E-04	1,03E-04	1,85E-07	0,00E+00	1,03E-04	1,58E-03	1,24E-08	-2,16E-04
POCP	kg NMVOC eq.	1,11E-03	7,79E-05	3,34E-04	6,58E-05	1,18E-07	0,00E+00	6,58E-05	4,69E-04	3,70E-09	-8,62E-05
ADP-minerals & metals	kg Sb eq.	1,55E-06	7,34E-08	1,24E-07	6,18E-08	1,11E-10	0,00E+00	6,18E-08	4,10E-08	1,13E-13	-5,88E-08
ADP-fossil	MJ	4,97E+00	3,17E-01	5,23E-01	2,67E-01	4,81E-04	0,00E+00	2,67E-01	6,45E-01	3,61E-06	-2,23E-01
WDP	WDP (m^3) świat. ekw	8,26E-02	1,31E-03	5,01E-03	1,11E-03	2,00E-06	0,00E+00	1,11E-03	1,99E-03	7,81E-09	-1,88E-03

ADDITIONAL IMPACT INDICATORS: 1 kg CREATON cement roof tiles

		Life Cycle Stage									
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PM	Disease incidency	1,22E-08	1,65E-09	9,61E-10	1,40E-09	2,52E-12	0,00E+00	1,40E-09	8,29E-09	7,06E-14	-1,74E-09
IRP	kBq U235 eq.	4,76E-02	4,13E-04	1,22E-03	3,47E-04	6,24E-07	0,00E+00	3,47E-04	3,87E-04	1,99E-09	-8,42E-04
ETP-fw	CTUe	6,24E-05	9,50E-07	1,35E-05	8,01E-07	1,44E-09	0,00E+00	8,01E-07	1,61E-05	5,07E-12	-7,12E-06
HTP-c	CTUh	1,64E-09	1,60E-10	6,22E-10	1,35E-10	2,43E-13	0,00E+00	1,35E-10	1,45E-10	1,06E-15	-5,51E-09
HTP-nc	CTUh	2,75E-09	1,99E-10	3,24E-10	1,68E-10	3,02E-13	0,00E+00	1,68E-10	3,18E-10	4,87E-16	-2,10E-10
SQP	-	1,54E+00	1,91E-01	2,09E+00	1,61E-01	2,91E-04	0,00E+00	1,61E-01	8,90E-02	4,44E-06	-1,48E-01

INDICATORS DESCRIBTIONS RESOURCE CONSUMPTION: 1 kg CREATON cement roof tiles

		Life Cycle Stage									
Indicator	**Unit**	**A1**	**A2**	**A3**	**A4**	**A5**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	5,63E-01	5,46E-03	4,04E-01	4,59E-03	8,26E-06	0,00E+00	4,59E-03	3,42E-02	1,08E-07	-2,71E-02
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	0,00E+00	0,00E+00
PERT	MJ	5,63E-01	5,46E-03	4,04E-01	4,59E-03	8,26E-06	0,00E+00	4,59E-03	3,42E-02	1,08E-07	-2,71E-02
PEN-RE	MJ	5,30E+00	3,37E-01	5,63E-01	2,84E-01	5,11E-04	0,00E+00	2,84E-01	6,85E-01	3,84E-06	-2,36E-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	0,00E+00	0,00E+00
PENRT	MJ	5,30E+00	3,37E-01	5,63E-01	2,84E-01	5,11E-04	0,00E+00	2,84E-01	6,85E-01	3,84E-06	-2,36E-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	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	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	0,00E+00	0,00E+00
FW	m^3	9,85E-03	5,85E-05	5,70E-04	4,90E-05	8,81E-08	0,00E+00	4,90E-05	3,94E-04	1,44E-10	-1,06E-04

INDICATORS DESCRIBING OUTPUT STREAMS AND WASTE: 1 kg CREATON cement roof tiles											
	Life Cycle Stage										
Indicator	Unit (expressed per DU)	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste	kg	WN	WN	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Non-hazardous waste	kg	WN	WN	1,22E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Radioactive waste	kg	WN	WN	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Components for re-use	kg	WN	WN	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	WN	WN	7,65E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	WN	WN	1,35E-02	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	WN	WN	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,02E-01

BIOGENIC CARBON	
Contents organic carbon in product (kg C_{org})	0,00E+00
Contents organic carbon in packaging (kg C_{org})	6,48E-03

6. INTERPRETATION OF LCA

Figures 2 present diagrams of the shares of individual life cycle modules on the basic impact categories for CREATON *cement roof tiles*:

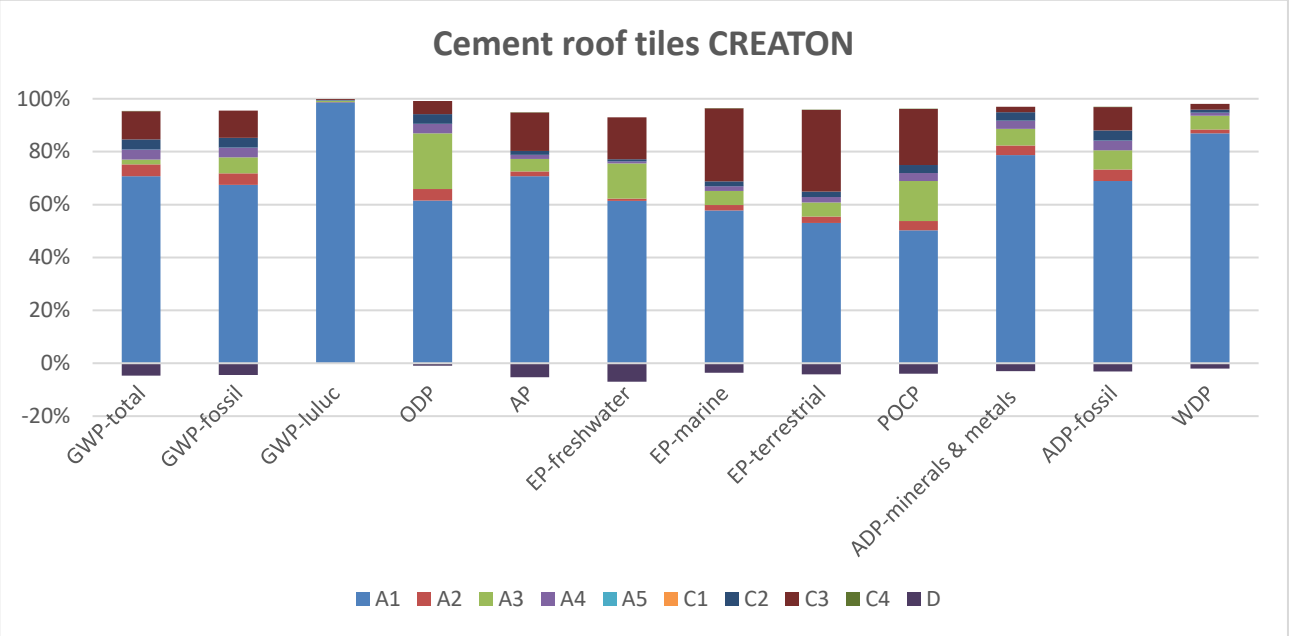


Figure 2 Shares of life cycle modules in the main categories of impacts – cement roof tiles CREATON

LITERATURE

- ✓ ICIMB-PCR A. General Product Category Rules for Construction Products.
- ✓ PN-EN ISO 14025:2014-04, Environmental labels and declarations -- Type III environmental declarations -- Rules and procedures.
- ✓ PN-EN 15804+A2:2020, Sustainability of building structures -- Environmental product declarations -Basic principles of categorization of construction products.
- ✓ PN-EN ISO 14040:2009 Environmental management. Life Cycle Assessment. Principles and structure.
- ✓ PN-EN ISO 14044:2009, Environmental management. Life Cycle Assessment. Requirements and guidelines.
- ✓ EN 15942:2012, Sustainability of construction works – Environmental product declarations – Communication format business-to-business.
- ✓ KOBiZE CO_2, SO_2, NO_x, CO and total particulate matter emission factors for electricity, December 2023.
- ✓ Additional explanatory material can be obtained from the company page of the declaration owner: https://creaton.pl/