EuroSYSTEM®

ECO PLATFORM
EPD VERIFIED

Environmental Product Declaration (EPD)
Type III (EPD) ITB number 579/2023

Issue date: 20.12.2023 | Expiry date: 20.12.2028

🔴 ROOFING UNDERLAYS

🔵 VAPOUR CONTROL LAYERS

🟠 WIND BARRIER MEMBRANES

ITB®

BASIC INFORMATION

—

1

The declaration is a Type III Environmental Product Declaration (EPD) based on EN 15804 and verified in accordance with ISO 14025 by an independent auditor.

It contains information on the environmental impact of the declared building materials. Their aspects have been verified by an independent entity in accordance with ISO 14025. Basically, a comparison or evaluation of EPD data is only possible if all the comparable data have been created in accordance with EN 15804 (see clause 5.3 of the standard).

LCA analysis: A1 - A3, A4, A5, C1 - C4 and D according to EN 15804 (from cradle to grave with options)

Year of development of the EPD: 2023

PCR: Document ITB-PCR A (based on EN 15804)

Declared unit: 1 m^2 product

Reason for implementation: B2B Representativeness:

Polish products, 2022

MANUFACTURER

—

2

Eurosystem specializes in the production of top-quality products that complement the roofing system in pitched and flat roofs. The keywords in the company's operations are innovation, quality, partnership, honesty and business integrity.

The full offer of the company consists of:

1. Systems of membranes and roof accessories for sloped roofs and ventilated attics,

2. High vapour permeable roof membranes and accessories for pitched roofs,

3. Roof membranes and roofing accessories used for ventilated, pitched roofs,

4. Anti-humidity vertical and horizontal building insulation,

5. Other products that complement the roofing systems in pitched and flat roofs.

In order to ensure the highest possible quality of manufactured products, Eurosystem uses resources which are of both high and stable quality. Owing to this Eurosystem's products can be used in all conditions. Thanks to the company's business integrity and the highest possible level of customer service Eurosystem is gaining a noticeable position in the worldwide market.

Eurosystem focuses on innovation. The tasks the company performs are challenging - this is why Eurosystem constantly develops. The company is guided by the principles of sustainable development, and a large part of its profits are invested in new technologies.

PRODUCT DESCRIPTION AND APPLICATION

3

Eurosystem has many years of experience in the production and sale of roof membranes and other accessories.

The main material used to manufacture the membranes is polypropylene. The environmental declaration EPD developed within the scope of this document covers 3 products: roofing underlays, vapour control layers and wind barrier membranes.

ROOFING UNDERLAYS

—

Roofing underlays are products that are used as initial covering for pitches, insulated, ventilated, non-sarked and fully sarked. They consist of non-woven polypropylene and a functional film. They come in many colour variations in weights from 80 to 450 g/m². They can be two-three or four layers with or without reinforcement. Waterproof (class W1) and highly permeable (sd coefficient mostly c.a. 0.02 m with a few exceptions). Mechanical properties and resistance to nail tearing depend on grammage, number of layers and customer preference.

WIND BARRIER MEMBRANES

—

Wind barrier membranes are used for the protection of the facades against wind, rain and moisture. They are applied in case of facade insulation systems, metal facades, frame construction as well as in case of log houses too. They come in many colour variations in weights from 80 to 210 g/m². They can be one-two or three layers. Waterproof (class W1, W2 or W3) and highly permeable (sd coefficient mostly c.a. 0.02 m with a few exceptions). Mechanical properties and resistance to nail tearing depend on grammage, number of layers and customer preference.

VAPOUR
CONTROL LAYERS
AND VAPOUR BARRIERS

—

Vapour control layers and barrier membranes are active membranes used as a vapour barrier layer for roofs and walls in case of residential, commercial construction as well as specialized, innovative architectural projects. They come in many colour variations in weights from 85 to 180/m^2. They can be one-two or three layers with or without reinforcement. Waterproof (class W1) and sd from 2 to 150m. Mechanical properties and resistance to nail tearing depend on grammage, number of layers and customer preference.

OVERVIEW
OF PROPERTIES

—

Overview of properties of Eurosystem roofing underlays.

Properties	Values
Mass per m^2	80 - 450 g/m^2
Watertightness	W1
Layers	2 - 4 with or without reinforcement
Diffusion resistance coefficient Sd	generally 0.02 m (highly-permeable roofing membranes) with some exceptions for customer orders
Tensile properties and resistance to tear (nail shrank)	depends on mass per unit area, number of layers and customer individual preferences
UV resistance	generally 4 months
UV exposure	generally 4 weeks

Overview of properties of Eurosystem wind barrier membranes.

Properties	Values
Mass per m^2	80 - 210 g/m^2
Watertightness	W1, in some cases W2 or W3
Vapour permeability	3 000 g/m2/24h, in some cases 144 g/m^2/24h
Layers	1 - 3 layers
Diffusion resistance coefficient sd	generally 0.02 m (highly-permeable roofing membranes) with some exceptions for customer orders
Tensile properties and resistance to tear (nail shrank)	depends on mass per unit area, number of layers and customer individual preferences
UV resistance	generally 4 months, in some cases up to 12 months
UV exposure	generally 4 weeks, in some cases up to 6 months

EuroSYSTEM®

Overview of properties of Eurosystem vapour control layers and vapour barriers.

Properties	Values
Mass per m^2	85 – 180 /m^2
Watertightness	W1
Vapur permeability	0.5 - 6.0 g/m^2/24h
Layers	1 - 3 with or without reinforcement
Diffusion resistance coefficient sd	generally 2 - 150 m
Tensile properties and resistance to tear (nail shrank)	depends on mass per unit area, number of layers and customer individual preferences
UV resistance	generally 2 - 4 months
UV exposure	generally 4 weeks

LIFE CYCLE ASSESSMENT (LCA) - GENERAL PRINCIPLES

4

Declared unit

The declared unit is the production of 1 m^2 of roofing underlays, vapour control layers, and wind barrier membranes of different densities, described in the section "Product description and application".

Allocation

Allocation in this study was created in accordance with ITB PCR A guidelines. The production takes place at the plant in Przywory, Poland. Input data for the production plant have been inventoried. The results obtained are representative average for all roofing underlays, vapour barrier membranes and wind barrier membranes produced by Eurosystem. The allocation of impacts is based on the m^2 of the product. All revenues from the extraction of raw materials used in production are allocated to module A1. Production of products is based on 100% raw materials. Module A2 is the transport of raw materials to the production plant. The energy, fuel and waste consumption for the entire production process has been inventoried and included in module A3.

System Boundaries

The life cycle analysis of the declared products includes the production stage (modules A1 - A3), A4, A5, C1-C4+D ("from cradle to grave with options") according to EN 15804 and ITB PCR A.

System Limits

100% of the input materials and 100% of the electricity and fuel consumption were inventoried at the production plant. The assessment takes into account all relevant parameters from the collected production data, i. e. all materials used for production, electricity used, fuels and direct production waste. Substances with a percentage of less than 1% of total weight were excluded from the calculation. It is assumed that the total sum of omitted processes does not exceed 0.5% of all impact categories. Packaging materials were inventoried: finished products are wrapped in foil.

Modules A1 and A2
Extraction and transport of raw materials

Raw materials for production, i.e. polypropylene, colour masterbatch, UV stabilisers, polypropylene grids, packaging materials and accessories such as tapes or glycine are transported from different European countries. Module A1 presents the impact of production and extraction of raw materials further used in the production of membranes. Data on the transport of raw materials shall be recorded by the plant. Means of transport include trucks and ships. European fuel averages have been used for the calculation of module A2.

Module A3 Production

The production process of Eurosystem membranes is illustrated in the diagram on page 9. Roofing underlays, roofing foil, vapour control layers, vapour foil and wind barriers are produced from raw materials supplied to the plant. They are transported from the transfer zone to the machine. Then printing, adding a self adhesive system and cutting takes place. Finished products are packed, stacked on pallets and then stored in warehouses or delivered to recipients.

Raw material	Composition in finished product (%)
Polypropylene	81.50
Color Masterbatch	0.63
UV stabiliser	0.73
Grid (Polypropylene)	17.14

Module A4 Transport

Finished products are transported to customers in Poland and abroad, the average transport distances are calculated in proportion to the quantity of transported products. Finished products are transported by trucks or by train. The most common form of transport is road transport. Each roll of the finished product is packed in LDPE foil with UV stabilizing additives, then placed on a wooden pallet, secured with a PP band and stretch foil. In some cases, the entire pallet is additionally packed in a cardboard box. For loading, forklifts are used. The average transportation distance for Eurosystem membranes is 999.3 km. Main of orders are in Europe, where they are transported by trucks or by train. The fuels used depend on the means of transport used, but the majority is diesel.

Module A5 Installation

For the installation of membranes tape nails or electric staplers are used. This study assumes the installation of membranes using an electric stapler.

Module C1 Deconstruction and Demolition

It is assumed that deconstruction of the membranes is possible in parallel with the demolition of the roof structure, and during such a process the impacts from deconstruction of the membranes are negligibly small. No information on the impact of deconstruction in the construction sector or any other sector is available for the Eurosystem membranes. Therefore, no contribution to the impact categories of this module has been reported and the module is equal to 0.

Module C2 Transport

It is assumed that the end-of-life product will be transported by truck to the nearest waste treatment plant (truck, diesel) within 100 km.

Module C3 Waste treatment

It is considered that during the replacement of the roof slope 5% of the material will be recycled and 85% will be used for energy recovery.

Module C4 Disposal

After the end of use, 10% of the product goes to the landfill.

Module D Benefits and Loads Outside the System Boundaries

Module D presents the burdens and benefits of recycling - 5% of the product will be recycled. Benefits are assessed at the functional equivalence point, i.e. where substitution of primary raw material takes place.

Period of data collection

The input data for the calculation of declared products shall cover the period from January to December 2022. The Life Cycle Assessment has been prepared for Poland as a reference area.

Data Quality

The data for the calculation of modules A1-A5 are derived from verified LCI inventory data from the plant. According to Annex E of PN-EN 15804 + A2 data quality assessment was carried out. For technical representativeness, processes with "very good" quality represent 99% of the values for climate change indicators. For geographical and temporal representativeness, the process rating was "very good".

Assumptions and estimates

The impacts of representative products were aggregated using a weighted average. The results obtained for representative products can be related proportionally to all Eurosystem membranes from the analysed groups.

Calculation rules
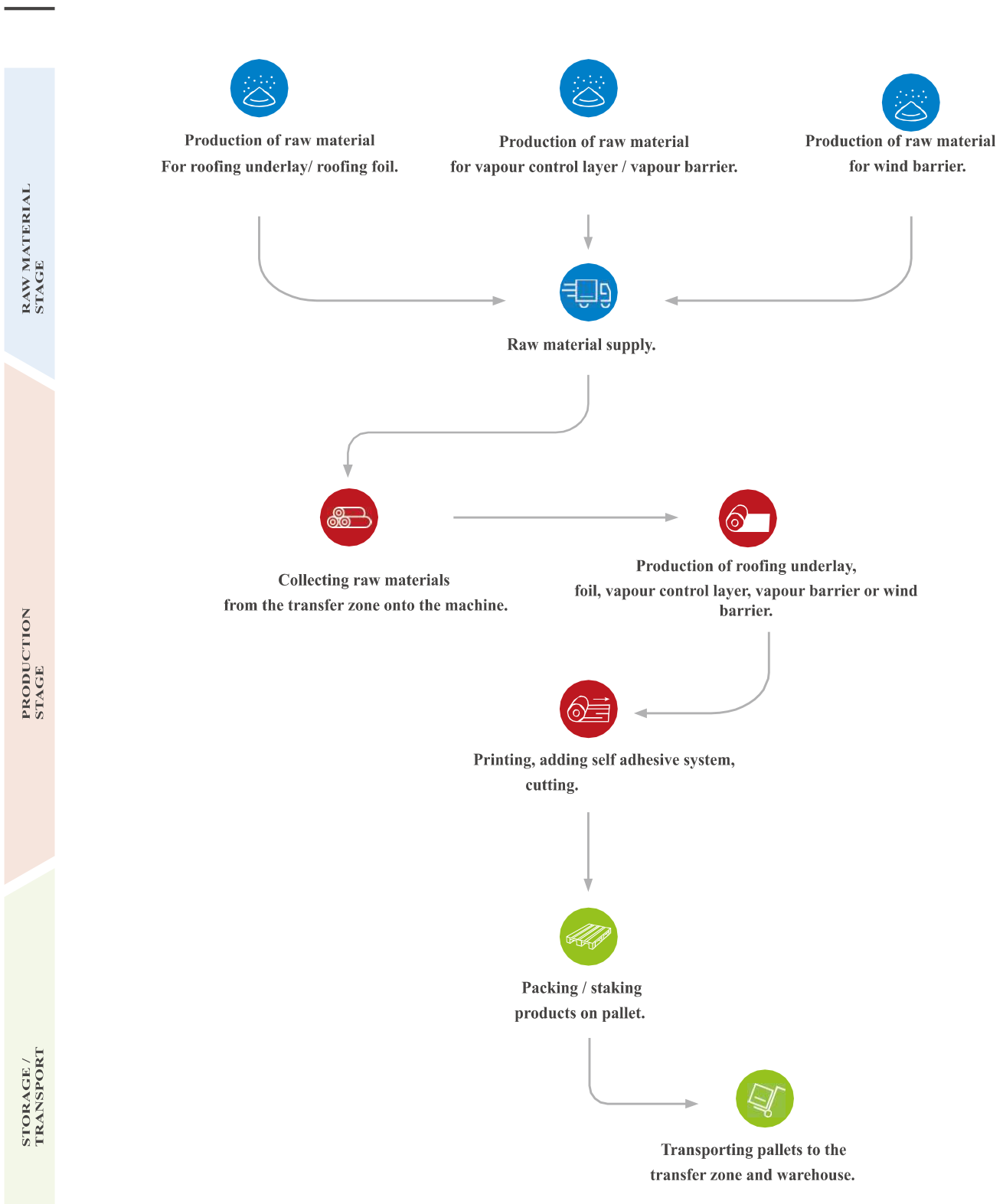
LCA was made in accordance with PN-EN 15804+a2 standard and ITB PCR A document (v1.6, 2023).

Databases

The calculation data comes from the Ecoinvent v. 3.6, Ecoinvent v. 3.8 and from the databases available in the Bionova OneClickLCA software. Emission factors for electricity have been supplemented with actual KOBIZE data. Characteristic factors are CML ver. 4.2 based on EN 15804+A2.

EuroSYSTEM ®

PRODUCTION SCHEDULE
for Eurosystem membranes

RAW MATERIAL STAGE

Production of raw material
For roofing underlay/ roofing foil.

Production of raw material
for vapour control layer / vapour barrier.

Production of raw material
for wind barrier.

Raw material supply.

PRODUCTION STAGE

Collecting raw materials
from the transfer zone onto the machine.

Production of roofing underlay,
foil, vapour control layer, vapour barrier or wind
barrier.

Printing, adding self adhesive system,
cutting.

Packing / staking
products on pallet.

STORAGE / TRANSPORT

Transporting pallets to the
transfer zone and warehouse.

LIFE CYCLE ASSESSMENT (LCA) - RESULTS

—

5

Declared unit

The declared unit is 1 m2 of Eurosystem membrane manufactured by Eurosystem Polska Sp. z o.o. Sp. K.

The following indicates which LCA assessment modules were included in the assessment:

Production stage			Distribution and installa-tion stage		Usage stage							Disposal stage				
Raw material delivery	Transport	Production	Raw material delivery	Usage, applications	Maintenance	Repair	Replacement	Replacement	Energy contribution to product usage	Water input for product usage	Dismantling / demolition	Transport	Waste treatment	Disposal	Potential for reuse, recovery or recycling
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
MA	MA	MA	MA	MA	MNA	MNA	MNA	MNA	MNA	MNA	MNA	MA	MA	MA	MA	MA

MA module assessed, MNA module not assessed

As the raw materials in the production stage provide the main contribution to the results of the environmental balance, there is a linear relationship between the grammage of the raw materials and the environmental impact.

The calculations carried out in the study refer to the grammage of 160 g/m². For further results for other dimensions and variants of Eurosystem membranes, please use the following formula:

$$P(x) = [P(x_1)/x_1]*x$$

$P(x)$: Indicator for the new, declared product

$P(x_1)$: indicator obtained for the product representing the product type, (e.g. global warming potential (GWP)

x: Grammage of the new declared product

x_1:   Grammage of the product representing the type of products.

RESULTS
for Eurosystem membranes

—

Environmental impacts

Indicator	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
Potential for creating a greenhouse effect - total	kg CO_2 eq.	4.74E-01	3.09E-02	1.92E-01	2.76E-02	1.71E-02	0.00E+00	1.46E-03	1.06E-01	5.75E-03	-2.33E-02
Potential for creating a greenhouse effect - resulting from the consump- tion of fossil fuels	kg CO_2 eq.	4.72E-01	3.09E-02	2.17E-01	2.76E-02	1.71E-02	0.00E+00	1.45E-03	1.06E-01	9.23E-04	-2.32E-02
Potential for creating a greenhouse effect - biogenic	kg CO_2 eq.	1.42E-03	2.37E-05	-2.65E-02	1.13E-05	9.83E-06	0.00E+00	1.06E-06	8.20E-07	4.83E-03	-6.35E-05
Potential for creating a greenhouse effect - land use and changes in land use	kg CO_2 eq.	5.80E-04	1.02E-05	7.65E-04	1.08E-05	1.25E-06	0.00E+00	4.38E-07	1.20E-05	0.00E+00	-2.87E-05
Ozone-depleting potential of the stratosphere	kg CFC 11 eq.	1.84E-08	3.44E-08	4.55E-09	5.97E-09	2.86E-10	0.00E+00	3.42E-10	2.04E-10	0.00E+00	-8.98E-10
Acidification potential of soil and water	mol H+ eq.	2.07E-03	3.10E-04	5.41E-04	8.47E-05	1.75E-04	0.00E+00	6.11E-06	3.75E-05	6.56E-07	-1.02E-04
Freshwater eutrophication potential	kg Pe	1.31E-05	2.65E-07	5.29E-06	2.80E-07	2.64E-06	0.00E+00	1.18E-08	1.61E-08	2.46E-07	-6.40E-07
Eutrophication potential of marine waters	kg N eq.	3.91E-04	5.11E-05	8.92E-05	1.74E-05	1.91E-05	0.00E+00	1.84E-06	1.81E-05	8.83E-06	-1.92E-05
Potential for terrestrial eutrophi- cation	kg N eq.	4.29E-03	5.63E-04	9.39E-04	1.94E-04	2.13E-04	0.00E+00	2.03E-05	1.86E-04	6.61E-08	-2.12E-04
Tropospheric ozone creation potential	kg NMVOC eq.	1.58E-03	2.03E-04	2.72E-04	7.10E-05	5.88E-05	0.00E+00	6.54E-06	1.02E-04	5.26E-06	-7.80E-05
Abiotic depletion potential of non-fossil resources	kg Sb eq.	2.95E-06	2.11E-07	2.80E-07	7.32E-07	1.19E-08	0.00E+00	2.48E-08	3.35E-09	0.00E+00	-1.46E-07
Abiotic depletion potential of fossil fuels	MJ	1.33E+01	2.08E+00	1.08E+00	4.07E-01	1.99E-01	0.00E+00	2.26E-02	1.64E-02	0.00E+00	-6.60E-01
Water consumption	m3	1.82E-01	3.14E-03	3.43E-02	1.62E-03	1.72E-03	0.00E+00	8.41E-05	1.75E-03	0.00E+00	-8.82E-03

Environmental aspects of resource use

Indicator	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
Renewable, primary energy as an energy carrier	MJ	3.57E-01	7.14E-03	2.80E-01	4.84E-03	2.58E-02	0.00E+00	2.85E-04	3.67E-04	0.00E+00	-1.77E-02
Renewable primary energy for material use	MJ	0.00E+00	0.00E+00	1.51E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Completely renewable primary energy	MJ	3.57E-01	7.14E-03	4.31E-01	4.84E-03	2.58E-02	0.00E+00	2.85E-04	3.67E-04	0.00E+00	-1.77E-02
Non-renewable primary energy as a source of energy	MJ	8.13E+00	4.75E-01	1.06E+00	4.07E-01	1.99E-01	0.00E+00	2.26E-02	1.64E-02	0.00E+00	-4.01E-01
Non-renewable primary energy for material use	MJ	5.22E+00	1.60E+00	2.31E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.59E-01
Completely non-renewable primary energy	MJ	1.33E+01	2.08E+00	1.08E+00	4.07E-01	1.99E-01	0.00E+00	2.26E-02	1.64E-02	0.00E+00	-6.60E-01
Use of secondary raw materials	kg	8.93E-04	9.05E-05	1.42E-04	0.00E+00	1.60E-05	0.00E+00	0.00E+00	1.13E-05	0.00E+00	-4.38E-05
Renewable secondary fuels	MJ	4.79E-05	1.48E-06	3.04E-05	0.00E+00	1.44E-07	0.00E+00	0.00E+00	6.88E-08	0.00E+00	-2.38E-06
Non-renewable secondary fuels	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
Use of fresh water resources	m3	4.71E-03	8.60E-05	6.52E-04	7.18E-05	4.43E-05	0.00E+00	4.71E-06	5.23E-06	0.00E+00	-2.28E-04

Other environmental information describing waste categories

Indicator	Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste destined for landfill	kg kg	2.12E-02	7.05E-04	3.82E-03	5.53E-04	7.07E-04	0.00E+00	2.20E-05	0.00E+00	0.00E+00	-1.05E-03
Recycled non-hazardous waste	kg kg	5.29E-01	2.44E-02	2.34E-01	3.02E-02	1.19E-01	0.00E+00	2.43E-03	0.00E+00	0.00E+00	-2.61E-02
Radioactive waste disposed of	kg kg	1.21E-05	1.46E-05	1.46E-06	2.68E-06	7.02E-08	0.00E+00	1.55E-07	0.00E+00	0.00E+00	-5.92E-07
Components to be reused	kg 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
Recyclable materials	kg kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.89E-03	0.00E+00	0.00E+00
Materials for energy recovery	kg kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.34E-01	0.00E+00	0.00E+00
Exported electricity	MJ MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.15E+00	0.00E+00	0.00E+00

VERIFICATION

—

The verification process of this EPD is in accordance with ISO 14025 and ISO 21930.

After verification, this EPD is valid for a period of 5 years. There is no need for recalculation after 5 years if the input data has not changed significantly.

EN 15804 serves as the basis for ITB PCR-A Independent verification according to ISO 14025 (subsection 8.1.3.)

[ ] internal [X] external

External verification of EPD: Michał Piasecki, Professor ITB, m.piasecki@itb.pl

Input verification, LCI audit, LCA: Agnieszka Pikus, JW+A, a.pikus@jw-a.pl

LCA verification: Michał Piasecki, Professor ITB, m.piasecki@itb.pl

Podpis jest prawidłowy
Dokument podpisany przez
Michał Piasecki ITB
Data: 2023.../... 22 13:25:12
CET

Note 1: The declaration owner has the sole ownership, liability, and responsibility for the for the information provided and contained in EPD. Declarations of construction products may not be comparable if they do not comply with EN 15804+A2. For further information about comparability, see EN 15804+A2 and ISO 14025.

Note 2: ITB is a public Research Organization and Notified Body (EC Reg. no 1488) to the European Commission and to other Member States of the European Union designated for the tasks concerning the assessment of building products' performance. ITB acts as the independent, third-party verification organization (ISO 17025/17065/17029). ITB-EPD program is recognized and registered member of The European Platform - Association of EPD program operators and ITB-EPD declarations are registered and stored in the international ECO-PORTAL.

REFERENCES

Normative references

- ITB PCR A General Product Category Rules for Construction Products

- ISO 14025:2006 Environmental labels and declarations – Type III environmental declarations – Principles and procedures

- ISO 21930:2017 Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services

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

- EN 15804 +A2 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products

- PN EN 13859-1:2010 Flexible sheets for waterproofing Part 1: Underlays for discontinuous roofing

- PN EN 13859-2:2010 Flexible sheets for waterproofing Part 2: Underlays for walls

- PN EN 13984:2013 Flexible sheets for waterproofing - Plastic and rubber vapour control layers - Definitions and characteristics

- Fixed values for processing end-of-life scenarios belonging to: Method of Determination Environmental Performance of Buildings; version May 2022

WE
DEVELOP
ROOFING
IDEAS

CERTIFICATE № 579/2023
of TYPE III ENVIRONMENTAL DECLARATION

Products:

Roofing Underlays, Vapour Control Layers, Wind Barrier Membranes

Manufacturer:

Eurosystem Polska Sp. z o.o. Sp. K.

ul. Wiejska 13, 46-055 Przywory, Poland

confirms the correctness of the data included in the development of
Type III Environmental Declaration and accordance with the requirements of the standard

EN 15804+A2

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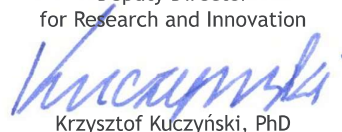Core rules for the product category of construction products.

This certificate, issued on 20th December 2023 is valid for 5 years
or until amendment of mentioned Environmental Declaration

Head of the Thermal Physic, Acoustics
and Environment Department

Agnieszka Winkler-Skalna, PhD

Deputy Director
for Research and Innovation

Krzysztof Kuczyński, PhD

Warsaw, December 2023