GlobalEPD

A VERIFIED ENVIRONMENTAL DECLARATION

AENOR

ECO PLATFORM EPD VERIFIED

Environmental Product Declaration

IN ISO 14025:2010

IN 15804:2012+A2:2019

HOOPOL KP-1495

Recycled PET Polyester polyol

Date of first issue:	2024-12-31
Expiration Date:	2029-12-30

The declared validity is subject to registration and publication on www.aenor.com

Registered number: GlobalEPD EN15804-107

Synthesia Technology

Synthesia Technology Europe

The holder of this Declaration is responsible for its content, as well as for keeping the supporting documentation that justifies the data and statements included during the period of validity.

Owner of the Declaration
Synthesia Technology Europe SLU
c/ Argent, 3
08755 Castellbisbal (Barcelona, Spain)

Tel. (+34) 93 682 13 00
Mail gtestar@synthesia.com
Web www.synthesia.com

LCA practicioner
Synthesia Technology Europe SLU
c/ Argent, 3
08755 Castellbisbal (Barcelona, Spain)

Tel. (+34) 93 682 13 00
Mail mcordon@synthesia.com
Web www.synthesia.com

GlobalEPD Programme Operator
AENOR CONFÍA, S.A.U
C/ Génova 6
28004 – Madrid
Spain

Tel. (+34) 902 102 201
Mail aenordap@aenor.com
Web www.aenor.com

AENOR is a founding member of ECO Platform, the European Association of Environmental Product Declaration Verification Programs.

The European Standard EN 15804:2012+A2:2019 serves as the basis for PCR
Independent verification of the declaration and data in accordance with EN ISO 14025:2010 ☐Internal ☒External
Verification body AENOR Product certification body accredited by ENAC with accreditation Nº 1/C-PR468

1. General Information

1.1. The organisation.

Synthesia Technology Europe SLU is part of Synthesia Technology Group, a Spanish holding company specialized in the manufacture and commercialization of chemical products, polyester polyols and polyurethane systems for thermal and acoustic insulation and diverse industrial applications. Synthesia Technology Group has three production facilities, two of which are in Barcelona, Spain (Castellbisbal and La Llagosta) and the third in Colón, Panama.

Synthesia technology is certified in ISO 14001 and 9001 in Castellbisbal and La Llagosta sites (Spain). Also, in April 2024 it was externally verified the Product Carbon Footprint (PCF) in accordance with ISO 14067:2018 for 57 Polyester Polyols produced in Spain

1.2. Declaration scope.

This Environmental declaration covers the production of 1Kg of unpacked HOOPOL KP-1495 Polyester Polyol produced in Barcelona-Castellbisbal site (Spain) in 2023 with a system boundaries cradle-to-gate (module A1-A3) including end of life stage (module C1-C4) and net benefits and loads (module D), according to UNE-EN ISO 14044:2006 and UNE-EN 15804:2012 +A1:2014 +A2:2020 (based on Environmental Footprint 3.1) regulation, through the gathering of high quality and updated data from the specific site and industry and combined them with the updated database values from Sphera Managed LCA Content (MLC) 2024.2.

1.3. Life cycle and compliance.

This Environmental Product Declaration (EPD) has been developed and verified in accordance with the UNE-EN ISO 14025:2010 and UNE-EN 15804:2012+A2:2020 Standards and the following Category Rules:

Product Category Rules Information

Title	Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
Registration code and version	UNE-EN 15804:2012+A2:2020
Publication date	2020
Compliance	UNE-EN 15804:2012 +A1:2014 +A2:2020
Programme Operator	AENOR

This Environmental declaration includes the following stages of the life cycle defined in the Figure 1.

Figure 1. Modules declared (x) and not declared (MND) in the HOOPOL KP-1495 LCA.

Product Stage	A1	Raw materials extrraction	X
	A2	Transportation to factory	X
	A3	Manufacturing	X
Construction	A4	Transport to construction site	MNE
	A5	Installation / construction	MNE
Product Stage	B1	Use	MNE
	B2	Maintenance	MNE
	B3	Repair	MNE
	B4	Replacement	MNE
	B5	Refurbishment	MNE
	B6	Operational energy use	MNE
	B7	Operational water use	MNE
End of life stage	C1	Deconstruction / Demolition	X
	C2	Transport	X
	C3	Waste processing	X
	C4	Disposal	X
	D	Reuse, recovery and / or recycling potential	X

X = Module included in the LCA; NR = non-relevant module. MNE= Module not evaluated

This EPD may not be comparable with those developed in other Programmes or according to different reference documents, in particular it may not be comparable with EPDs not developed according to UNE-EN 15804+A2.

Similarly, this EPD may not be comparable if the origin of the data is different (e.g. databases), not all relevant information modules are included, or they are not based on the same scenarios.

The comparison of construction products should be done on the same function, applying the same functional unit and at the level of the building (or architectural or engineering work), i.e. including the behaviour of the product throughout its life cycle, as well as the specifications of section 6.7.2 of the UNE-EN ISO 14025 standard.

2. The product

2.1. Identification of the product.

HOOPOL KP-1495 is a hydroxylated aromatic polyester polyol containing 35% Recycled PET. It corresponds to UN CPC code 34740.

Polyester polyols play a crucial role as intermediate products in the Polyurethane (PU) industry due to their remarkable versatility from the diverse combinations of monomers acids, glycols and/or other components at different molecular weights and functionalities (minimum 2 reactive groups per molecule). This versatility enables the creation of a wide range of final properties when the free hydroxyl groups from the polyester polyols react with isocyanate groups, to produce Polyurethanes.

Polyester polyols are used in many different industrial Polyurethane applications like flexible foam, rigid foam, coatings, footwear, adhesives, elastomers, thermoplastics, etc. Formulations for these applications often incorporate additional materials to enhance final product properties.

Specifically, HOOPOL KP-1495 is used in PU rigid foams where the main characteristic of is the thermal insulation and their enduring mechanical properties. The final products can be used in a variety of rigid applications, one such application is polyurethane sandwich panels for buildings, which optimise insulation in roofs, facades, and floors, thereby improving energy efficiency.

2.2. Product features.

Synthesia Technology declares the following information on the typical values of the product.

HOOPOL KP-1495 Features

Characteristics	Method	Typical value	Units
Appearance	---	Dark liquid	---
Specific weight 20ºC		1,20	g/cm^3
Hydroxyl Nr.	ASTM D2849	255	mg KOH/g
Acid Nr	ASTM 4662	2,5	mg KOH/g
Viscosity Brookfield 25ºC	UNE-EN-ISO 2555	2.000	cPs
Water content	ASTM E203	≤0,15	%
Recycled PET content	ISO 14021:2021	35	%
Nr equivalent PET bottles*	---	41	PET bottles/kg

*Theoretical calculation based on a bottle weight of 8.6 g/bottle.

2.3. Product composition.

The composition declared by the manufacturer is as follows:

HOOPOL KP-1495 Composition

Substance/ Component	Content	Unit
Polyester polyol	95-97	%
Viscosity reducer additive	3-5	%

3. Information about the LCA

3.1. Life cycle assessment.

Synthesia technology Europe SLU has conducted a Life Cycle Assessment (LCA) dated on 31/12/2024 v03 cradle-to-gate "at gate" (production site output) to deliver B2B customers with the Environmental Product Declaration (EPD) for 1Kg of unpacked Polyester Polyol HOOPOL KP-1495 produced in Barcelona-Castellbisbal site in 2023 with a system boundaries cradle-to-gate (module A1-A3) including end of life stage (module C1-C4) and net benefits and loads (module D), according to UNE-EN ISO 14044:2006 and UNE-EN 15804:2012+A1:2014+A2:2020 (based on Environmental Footprint 3.1) regulation, through the gathering of high quality and updated data from the industry and combined them with the updated database values from Sphera Managed LCA Content (MLC) 2024.2.

3.2. Functional unit.

1Kg of unpacked polyester polyol HOOPOL KP-1495 "at gate" (production site output) produced in Castellbisbal (Spain) site in production year 2023.

3.3. Allocation and cut off criteria.

The input and output values for the system in the LCA analysis, conducted using the LCA for Experts software from Sphera version 2024.2, were determined based on annual quantities from 2023 and product formula from bill of materials.

The allocation of inputs and outputs of direct GHG emissions of the production process is carried out by assigning the proportional part of the thermal energy invoiced and used in the site based on the hours of the production process of the product taking into accounts the total number of hours and total thermal energy consumption invoiced of the plant.

As indicated in the following calculation formula:

$$\text{Thermal Energy (KWh/kg)} = X * \frac{\text{Batch Production Time (hours)}}{\text{Kg (Product batch)} * \text{Annual site Production Time (hours)}}$$

Where X is the Annual Invoiced Thermal Energy.

On the other hand, the Allocation Factor (AF) for electricity, water, nitrogen, waste disposal and additional information from measured water and air emissions are allocated equally for each product based on the final product quantity produced during the stipulated time and related to the invoiced consumptions, as indicated in the following formula:

$$\text{Allocation factor (AF)} = \frac{\text{Invoiced or Measured parameter}}{\text{Kg (Annual site Production)}}$$

As for the final application, the main environmental impact category is the Carbon Footprint (GWPtotal). Therefore, the results below 1% in GWPtotal are excluded from the calculations.

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.

3.4. Representativeness, quality and selection of data.

Synthesia Technology Europe calculates the environmental indicators required for this Environmental Product Declaration (EPD) using the LCA for Experts software from Sphera version 2024.2 following the UNE-EN 15804:2012+A1:2014+A2:2020, which is already based on ISO 14025:2010 and ISO 14044:2016. Emission factors: the emissions have been calculated using the factors from the UNE-EN 15804:2012+A2:2020.

The results obtained from solely using EN 15804:2012+A1:2014 factors can be found in Additional Environmental Information.

The clarification about the estimated data quality is described in the following points

Process phase	Data Quality	Data Quality
Purchased raw materials	Limited	Primary data based on high-quality supplier data. When not available, Secondary data have been taken from region and technology most representative raw material data from Sphera Managed LCA Content (MLC) database 2024. Quality data is based on the mass average of all raw materials externally purchased. Only minor material (< 3%) not available from supplier specific-data neither from database is taken from literature.
Raw materials transport	Limited	Estimation based on best Synthesia's knowledge from transport mode and distance using the emission data from Sphera Managed LCA Content (MLC) database 2024.
Purchased Energy (Gas & Electricity)	Good	Emission factors based on high quality data from Sphera Managed LCA Content (MLC) database 2024 which are taken referred to our region and technology used in 2023.
Production process	Really good	Primary data from real specific site production data from the last complete calendar year (2023).
Process waste treatment	Good	Emission factors based on high quality data from Sphera Managed LCA Content (MLC) database 2024 which are taken referred to our region and technology used in 2023.

3.5 Other calculation rules and assumptions.

The electricity used in the production site Castellbisbal is sourced entirely from renewable energy, specifically from hydraulic and wind sources. We corroborate the 100% coverage of our renewable electricity consumption through Guarantees of Origin (GO's). This ensures that all the electricity we use is derived from renewable sources.

It has been assumed that the entire electricity supply is derived from wind energy to establish the most conservative scenario, as the climate change impact associated with wind energy is higher than that of hydropower.

In the following table are disclosed the Electricity values for Spain considered for Climate Change Total:

Impact factor	Units	Electricity Wind power*	Electricity Hydro power*
Climate Change Total	kg CO_2 e/kWh	0.013	0.008

*Sphera Managed LCA Content (MLC) database 2024

Besides this, in the below table is disclosed the Thermal Energy value for Spain considered for Climate Change Total:

Impact factor	Units	Termal energy
Climate Change Total	kg CO_2 e/MJ	0.075

*Sphera Managed LCA Content (MLC) database 2024

4. Limits of the system, scenarios, and additional technical information.

HOOPOL KP-1495 LCA report is defined as Cradle-to-gate including the Modules A1-A3, C1-C4 and Module D where Waste incineration (100%) with energy recovery is assumed as end-of-life scenario.

System boundaries and Flow Diagram for this LCA study is defined in Figure 2:

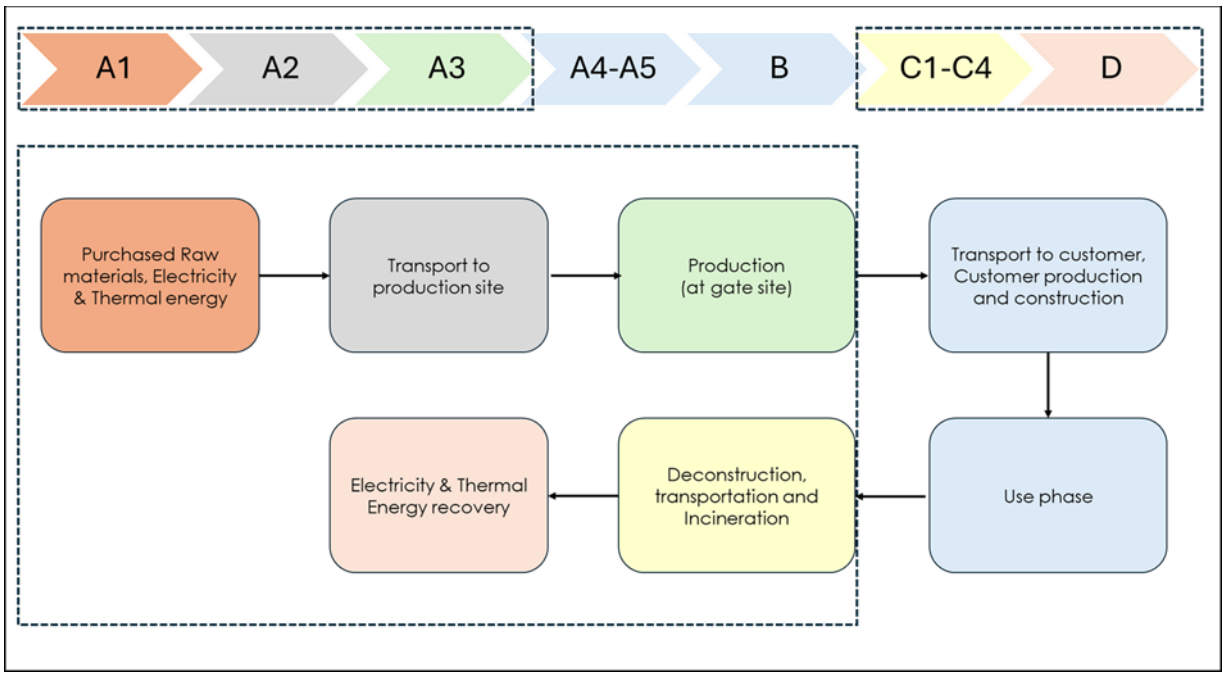

Figure 2. System boundary of LCA study conducted on HOOPOL KP-1495.

As Polyester polyols are intermediate products to the chemical Polyurethane industry, the following modules and flows are not evaluated (MNE) in this study and fall under our customer application:

- Modules A4-A5 are related to the transport, construction process and installation falling under our customers activities and will be assessed in their LCA.
- Modules B1-B7 related to the use phase are not assessed in this study because they are part of what our customers produce, installs and give as use-phase information.
- Packaging for the material is not included because it is delivered in bulk.
- The scope of this LCA study does not cover flame retardants or other additives that may be added to polyester for supply to customers. This is consistent with the approach adopted in the PU Europe study as they are a physical mixture, and their impact can be added by customers. (www.pu-europe.eu; www.plasticseurope.org).

4.1. Processes that precede manufacturing (upstream).

Module A1– Raw materials production: extraction, production, and consumption of fuels or other resources in the manufacture of the raw materials required including the use of electricity and thermal gas for the polyester production.

Module A2 – Transport: transporting between suppliers and production site.

4.2. Product Manufacturing (A3).

The production process covers raw materials loading, intermediate processes, main esterification/transesterification reaction, unloading to storge tank to deliver in bulk and processing of waste up to the end-of-waste state, or the disposal of final residues during the product stage

4.3. End of life stage.

Due to the biogenic content of HOOPOL KP-1495, the end-of-life stage (Modules C1-C4) and the net benefits and loads (Module D) should be calculated according to UNE-EN 15804:2012+A2:2020.

- Module C1– Deconstruction/demolition: The recovery of insulation panels containing polyester polyol through the demolition and deconstruction of buildings.
- Module C2 – Transportation to waste management plants: The insulation panels must be transported to the designated waste management site.
- Module C3 – Waste treatment: It includes the environmental impacts associated to the recycling and recovery process of the materials. The end-of-life scenario is incineration with energy recovery.
- Module C4 – Waste disposal: It covers the quantity of waste generated by the product process that is not be able for reuse or recycling. in our case, the Scenario considered as end-of-life is 100% Waste incineration with energy recovery.

HOOPOL KP-1495 LCA report considers the Modules C1 y C2 from a public EPD from Kingspan (Kingspan Sauna-Satu® product EPD. Declaration number EPD-KIN-20230016-CBA1-EN) as an insulation board with a rigid thermoset polyisocyanurate (PIR) fibre-free insulation core, faced on both sides with a low emissivity composite foil considering a thickness of 30 mm and RD-value of 1,35 m²·K/W.

End of life

Parameter	Unit (expressed by functional unit)*
Collection process, specified by type	0 kg collected separately
	0.9 kg collected with mixed construction waste
Recovery system, specified by type	0.025 kg for recycling
	0 kg for reuse
	0.875 kg for energy recovery
Disposal, specified by type	0 kg product or material for final disposal
Transport	50 km
Type of vehicle used	Truck Euro 6, diesel driven, 26-28 t gross weight

***** Data extracted from the Kingspan Sauna-Satu® product EPD. Declaration number EPD-KIN-20230016-CBA1-EN

4.4. Benefits and burdens beyond the system.

Module D – Reutilization, recovery and recycling potential: cover the net benefits and loads arising from the reuse of products or the recycling or recovery of energy from waste materials generated at each stage of the product life cycle. Reuse, recovery and/or recycling potentials (D), relevant scenario information Waste incineration (100%) with energy recovery is assumed as end-of-life scenario.

5. Declaration of the environmental parameters of the LCA and ICV.

The estimated impact results are relative and do not indicate the final value of the impact categories, nor do they refer to threshold values, safety margins, or risks.

Environmental impacts

Parameter	Units	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
GWP-total	kg CO2 eq	1,32E+00	2,88E-02	5,25E-02	1,41E+00	1,73E-04	1,14E-03	2,43E+00	0,00E+00	-8,05E-01
GWP-fossil	kg CO2 eq	1,50E+00	2,89E-02	5,18E-02	1,59E+00	1,73E-04	1,13E-03	2,43E+00	0,00E+00	-8,03E-01
GWP-biogenic	kg CO2 eq	-1,84E-01	-3,22E-04	6,84E-04	-1,83E-01	2,32E-07	-1,56E-06	1,75E-01	0,00E+00	-2,09E-03
GWP-luluc	kg CO2 eq	3,86E-03	2,20E-04	8,59E-06	4,09E-03	2,14E-09	6,30E-06	5,84E-05	0,00E+00	-4,87E-05
GWP-total-IPCC	kg CO2 eq	1,32E+00	2,88E-02	5,25E-02	1,41E+00	NA	NA	2,43E+00	NA	-8,05E-01
ODP	kg CFC11 eq	3,99E-12	3,11E-15	3,35E-13	4,33E-12	1,06E-17	6,78E-17	4,75E-13	0,00E+00	-8,30E-12
AP	mol H+ eq	7,28E-03	3,09E-04	1,55E-04	7,74E-03	8,04E-07	1,17E-06	2,34E-03	0,00E+00	-5,91E-04
EP-freshwater	kg P eq	2,47E-05	6,00E-08	4,63E-07	2,52E-05	3,48E-11	3,39E-09	1,09E-07	0,00E+00	-1,17E-06
EP-marine	kg N eq	2,11E-03	1,30E-04	3,10E-02	3,33E-02	3,84E-07	3,81E-07	1,15E-03	0,00E+00	-2,56E-04
EP-terrestrial	mol N eq	1,56E-02	1,42E-03	4,67E-04	1,75E-02	4,20E-06	4,53E-06	1,31E-02	0,00E+00	-2,73E-03
POCP	Kg NMVOC eq	5,13E-03	3,54E-04	1,47E-04	5,63E-03	1,09E-06	1,03E-06	2,93E-03	0,00E+00	-7,13E-04
ADP-minerals& metals [2]	kg Sb eq	4,52E-07	1,48E-09	5,35E-09	4,59E-07	7,08E-12	9,45E-11	4,70E-09	0,00E+00	-7,27E-08
ADP-fossil [2]	MJ	4,06E+01	3,55E-01	1,60E+00	4,26E+01	2,34E-03	1,51E-02	1,09E+00	0,00E+00	-1,66E+01
WDP [2]	m^3	1,61E+00	2,31E-04	3,47E-02	1,65E+00	3,21E-07	1,02E-05	2,31E-01	0,00E+00	-1,39E-02

GWP - Total: Global Warming Potential; GWP - fossil: Global warming potential of fossil fuels**; GWP - biogenic:** Biogenic Global Warming Potential; **GWP - luluc :** Global warming potential of land use and land use change**; ODP:** Stratospheric Ozone Depletion Potential; **AP:** Acidification potential, accumulated surplus; **EP-freshwater:** Eutrophication potential, fraction of nutrients that reach the final freshwater compartment**; EP-marine:** Eutrophication potential, fraction of nutrients that reach the final compartment of seawater; **EP-terrestrial:** Eutrophication potential, cumulative surplus; **POCP:** tropospheric ozone formation potential**; ADP-minerals&metals:** Abiotic resource depletion potential for non-fossil resources; **APD-fossil:** Abiotic Resource Depletion Potential for fossil resources; **WDP:** Water deprivation potential (user), weighted water deprivation consumption**. NR: N**ot relevant**; NA** Not available.

Additional environmental impacts

Parameter	Units	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
PM	disease incidence	7,38E-08	7,87E-09	2,09E-09	8,37E-08	9,09E-12	6,75E-12	7,06E-09	0,00E+00	-4,66E-09
IRP [1]	kBq U235 eq	6,74E-02	7,44E-05	2,43E-03	6,99E-02	3,75E-07	2,74E-06	3,74E-03	0,00E+00	-1,16E-01
ETP-fw [2]	CTUe	1,40E+01	2,63E-01	7,96E-01	1,50E+01	1,63E-03	1,05E-02	3,07E-01	0,00E+00	-5,97E-01
HTP-c [2]	CTUh	5,28E-10	5,02E-12	2,16E-11	5,55E-10	3,03E-14	2,12E-13	7,30E-11	0,00E+00	-1,39E-10
HTP-nc [2]	CTUh	1,54E-08	1,93E-10	6,32E-10	1,62E-08	1,52E-12	1,10E-11	7,17E-09	0,00E+00	-1,20E-09
SQP [2]	-	1,97E+01	8,54E-02	1,11E-01	1,99E+01	6,45E-06	5,22E-03	2,49E-01	0,00E+00	-2,93E+00

PM: Potential incidence of diseases due to particulate matter (PM) emissions**; IRP:** Human Potential Exposure Efficiency Relative to U235; **ETP-fw:** Comparative Ecosystem Toxic Unit Potential - Freshwater; **HTP-c:** Comparative Ecosystem Toxic Unit Potential - Carcinogenic Effects**; HTP-nc:** Comparative Ecosystem Toxic Unit Potential - Non-Carcinogenic Effects**; SQP:** Soil quality potential index**; NR**: Not relevant

Notice 1: This impact category deals mainly with the eventual impacts of low doses of ionizing radiation on human health, from the nuclear fuel cycle. It does not consider the effects due to possible nuclear accidents or occupational exposure due to the disposal of radioactive waste in underground facilities. The ionizing radiation potential of the ground, due to radon or from some construction materials, is not measured with this parameter either.

Warning 2: The results of this indicator of environmental impact should be used with caution, since the uncertainties of the results are high and the experience with this parameter is limited.

Resource use

Parameter	Units	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
PERE	MJ	5,40E+00	1,57E-02	2,07E-01	5,62E+00	8,85E-06	8,61E-04	2,27E-01	0,00E+00	-3,76E+00
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
PERT	MJ	5,40E+00	1,57E-02	2,07E-01	5,62E+00	8,85E-06	8,61E-04	2,27E-01	0,00E+00	-3,76E+00
PENRE	MJ	4,06E+01	3,55E-01	1,60E+00	4,26E+01	2,35E-03	1,52E-02	1,09E+00	0,00E+00	-1,66E+01
PENRM	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
PENRT	MJ	4,06E+01	3,55E-01	1,60E+00	4,26E+01	2,35E-03	1,52E-02	1,09E+00	0,00E+00	-1,66E+01
SM	kg	3,72E-01	0,00E+00	0,00E+00	3,72E-01	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
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
FW	m^3	3,76E-02	1,76E-05	1,40E-03	3,90E-02	1,33E-08	9,72E-07	5,46E-03	0,00E+00	-1,65E-03

PERE: Use of renewable primary energy excluding primary renewable energy resources used as raw material; **PERM:** Use of primary renewable energy used as raw material; **PERT:** Total use of primary renewable energy; **PENRE**: Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials; **PENRM**: Use of non-renewable primary energy used as raw material; **PENRT**: Total use of non-renewable primary energy; **SM:** Use of secondary materials; **RSF:** Use of renewable secondary fuels; **NRSF**: Use of non-renewable secondary fuels; **FW:** Net use of running water resources; **NR:** Not relevant

Waste categories

Parameter	Units	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
HWD	kg	1,43E-08	1,23E-11	6,39E-10	1,50E-08	7,74E-15	7,26E-14	4,78E-10	0,00E+00	-6,39E-09
NHWD	kg	4,62E-02	4,56E-05	1,49E-03	4,77E-02	2,20E-07	2,17E-06	9,09E-02	0,00E+00	-8,16E-03
RWD	kg	4,54E-04	5,23E-07	1,96E-05	4,75E-04	2,57E-09	1,87E-08	3,98E-05	0,00E+00	-1,32E-03

HWD: Hazardous Waste Disposed; **NHWD:** Non-hazardous waste disposed of; **RWD:** Radioactive waste disposed of; **NR:** Not relevant

Output flows

Parameter	Units	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
CRU	kg	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
MFR	kg	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
MER	kg	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
EE	MJ	0,00	0,00	0,00	0,00	0,00	0,00	12,34	0,00	0,00

CRU: Components for reuse; **MFR:** Materials for recycling; **MER:** Materials for energy recovery**; EE:** Exported energy**; NR:** Not relevant

Information on biogenic carbon content

Biogenic carbon content	Unit	Result by declared functional unit
Product biogenic carbon content - KgC	Kg C/ Kg product	0,05

6. Additional environmental information.

Total Emisions to water specific-site analysed data:

Contaminan	Units	Total quantity
Nitrogen	Kg / year	1,34E+02
Phosphorous	Kg / year	9,90E+01
Zinc and components	Kg / year	9,45E+00
Halogenated Organic Compounds (AOX)	Kg / year	5,67E+00
Total organic carbon (TOC)	Kg / year	7,93E+02
Chlorides	Kg / year	8,63E+03
Chemical Oxygen Demand (COD)	Kg / year	3,77E+03

Total Emisions to air specific-site analysed data

Contaminan	Units	Total quantity
Carbon monoxide (CO)	Kg / year	1,11E+05
Carbon dioxide (CO_2)	Kg / year	1,34E+07
Tetrachloroethylene (PER)	Kg / year	9,06E+01
Nitrogen oxides (NOx/NO2)	Kg / year	8,93E+03
Total suspended particulate (TSP)	Kg / year	2,72E+01
Total organic carbon (TOC)(air)	Kg / year	4,95E+03

EN 15804:2012+A1:2014 results for the modules A1-A3:

Environmental impact indicators	Units	A1	A2	A3	A1-A3
Global warming potential (GWP)	kg CO2 eq	1,30E+00	2,83E-02	5,09E-02	1,38E+00
Ozone Depletion Potential (ODP)	kg R11 eq.	4,70E-12	3,67E-15	3,95E-13	5,09E-12
Acidification potential (AP)	kg SO2 eq.	5,98E-03	2,23E-04	1,22E-04	6,33E-03
Eutrophication potential (EP)	kg Phosphate eq	8,56E-03	4,41E-05	1,34E-02	2,20E-02
Photochemical Ozone Creation Potential (POCP)	kg Ethene eq.	5,62E-04	1,44E-05	1,86E-05	5,95E-04
Abiotic depletion potential for non-fossil resources (ADPE)	kg Sb eq.	4,52E-07	1,47E-09	5,49E-09	4,59E-07
Abiotic depletion potential for fossil resources (ADPF)	MJ	3,90E+01	3,49E-01	1,50E+00	4,09E+01

Resource use indicators	Units	A1	A2	A3	A1-A3
Use of renewable primary energy (PERE)	MJ	5,40E+00	1,57E-02	2,07E-01	5,62E+00
Total use of renewable primary energy resources (PERT)	MJ	5,40E+00	1,57E-02	2,07E-01	5,62E+00
Use of non-renewable primary energy (PENRE)	MJ	4,06E+01	3,55E-01	1,60E+00	4,26E+01
Total use of non-renewable primary energy resources (PENRT)	MJ	4,06E+01	3,55E-01	1,60E+00	4,26E+01
Use of net fresh water (FW)	m3	3,76E-02	1,76E-05	1,40E-03	3,90E-02

Waste categories	Units	A1	A2	A3	A1-A3
Hazardous waste disposed (HWD)	Kg	1,43E-08	1,23E-11	6,39E-10	1,50E-08
Non-hazardous waste disposed (NHWD)	Kg	4,62E-02	4,56E-05	1,49E-03	4,77E-02
Radioactive waste disposed (RWD)	kg	4,54E-04	5,23E-07	1,96E-05	4,75E-04

7. References

[1] General Instructions of GlobalEPD Programme 3rd revision (09-10-2023)

[2] UNE-EN ISO 14025:2010 Environmental labels and declarations Tpye III environmental declarations. Principles and procedures (ISO 14025:2006).

[3] UNE-EN 15804:2012+A2:2020 Sustainability of construction Works. Environmental product declarations. Core rules for the product category of contruction.

[4] UNE-EN ISO 14040. Environmental management. Life cycle assessment. Principles and frame work. (ISO 14040:2006).

[5] UNE-EN ISO 14044. Environmental management. Life cycle assessment. Requirements and guidelines (ISO 14044:2006).

[6] Database values from Sphera Managed LCA Content (MLC) 2024.2

Index

AENOR

A VERIFIED ENVIRONMENTAL DECLARATION

GlobalEPD