

Owner: J. A. Plast
No.: MD-24078-EN
Issued: 30-05-2024
Valid to: 30-05-2029

3rd PARTY VERIFIED

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | ISO 14025 & EN 15804



Owner of declaration

J. A Plast
Vestervigvej 163, 7755 Bedsted
65699818



Issued:

30-05-2024

Valid to:

30-05-2029

Programme

EPD Danmark
www.epddanmark.dk



- Industry EPD
- Product EPD

Declared product(s)

1 Pcs Through tile

Number of declared datasets/product variations: 1

Production site

Vestervigvej 163
7755 Bedsted
Denmark

Use of Guarantees of Origin

- No certificates used
- Electricity covered by GoO
- Biogas covered by GoO

Declared unit

1 Through tile

Year of production site data (A3)

2022

EPD version

Version 1.0

Basis of calculation

This EPD is developed and verified in accordance with the European standard EN 15804+A2.

Comparability

EPDs of construction products may not be comparable if they do not comply with the requirements in EN 15804. EPD data may not be comparable if the datasets used are not developed in accordance with EN 15804 and if the background systems are not based on the same database.

Validity

This EPD has been verified in accordance with ISO 14025 and is valid for 5 years from the date of issue.

Use

The intended use of an EPD is to communicate scientifically based environmental information for construction products, for the purpose of assessing the environmental performance of buildings.

EPD type

- Cradle-to-gate with modules C1-C4 and D
- Cradle-to-gate with options, modules C1-C4 and D
- Cradle-to-grave and module D
- Cradle-to-gate
- Cradle-to-gate with options

CEN standard EN 15804 serves as the core PCR
Independent verification of the declaration and data, according to EN ISO 14025
<input type="checkbox"/> internal <input checked="" type="checkbox"/> external
Third party verifier:
_____ Guangli Du

Martha Katrine Sørensen
 EPD Danmark

Life cycle stages and modules (MND = module not declared)

Product			Construction process		Use								End of life				Beyond the system boundary
Raw material supply	Transport	Manufacturing	Transport	Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Re-use, recovery and recycling potential	
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X	

Product information

Product description

The main product components are shown in the table below.

Material	Weight-% of declared product
HIPS sheet	63 - 46%
ABS	0,8 - 1,2%
Steel	0 - 0,2%
EPDM	0 - 21,6%
Polychloroprene	0 - 10,1%
Butyl adhesive	0 - 0%
HIPS Granulate	0-33%
Paint	3-5%

Product and product no.	Weight per piece [g]
Tubetile TT2	448
Tubetile TT1	467
Bird and Bat Tile	424
AZ	538
GS	632

Product packaging:

The composition of the sales- and transport packaging of the product is shown in the table below.

Material	Weight of packaging material (kg)	Weight-% of packaging
Cardboard, packaging	1000	44%
EU Pallet, packaging	1250	56%
Total	2,250	100%

Representativity

This declaration, including data collection and the modeled foreground system including results,

represents the production of J. A. Plast Through tiles on the production site located in Bedsted, Denmark. Product specific data are based on average values collected in the period January 2022 to December 2022.

This EPD represents 5 different types of J. A. Plast Through Tiles. Each type has been modelled separately, but as the results varied more than +-10%, the results are declared as a mixed worst-case scenario.

Background data is based on Managed LCA Content (MLC) database from Sphera (version 2023.1) and Ecoinvent database version 3.8 and the data is less than 10 years old. Generally, the used background datasets are of high quality, and the majority of the datasets are only a couple of years old.

Hazardous substances

J. A. Plast Through Tiles do not contain substances listed on the "Candidate List of Substances of Very High Concern for authorisation"

(<http://echa.europa.eu/candidate-list-table>)

Product(s) use

J. A. Plast Through Tiles are used to lead e.g. cables through a roof construction with minimal risk of water intrusion.

Essential characteristics

Technical information can be obtained by contacting the manufacturer or on the manufacturers website:

<https://japlast.com/>

Reference Service Life (RSL)

N/A

Picture of product(s)

Below are pictures of the five products covered by this EPD.



Figure 1 Tubetile TT1, Tubetile TT2, Bird and Bat Tile, AZ and GS.

LCA background

Declared unit

The LCI and LCIA results in this EPD relates to 1 J. A. Plast Through Tile.

Name	Value	Unit
Declared unit	1	Pcs
Density	0,424-0,632	kg/Pcs
Conversion factor to 1 kg.	2,35-1,58	-

Functional unit

Not defined

PCR

This EPD is developed according to the core rules for the product category of construction products in EN 15804:2012+A2:2019, which serves as the core PCR.

Energy modelling principles

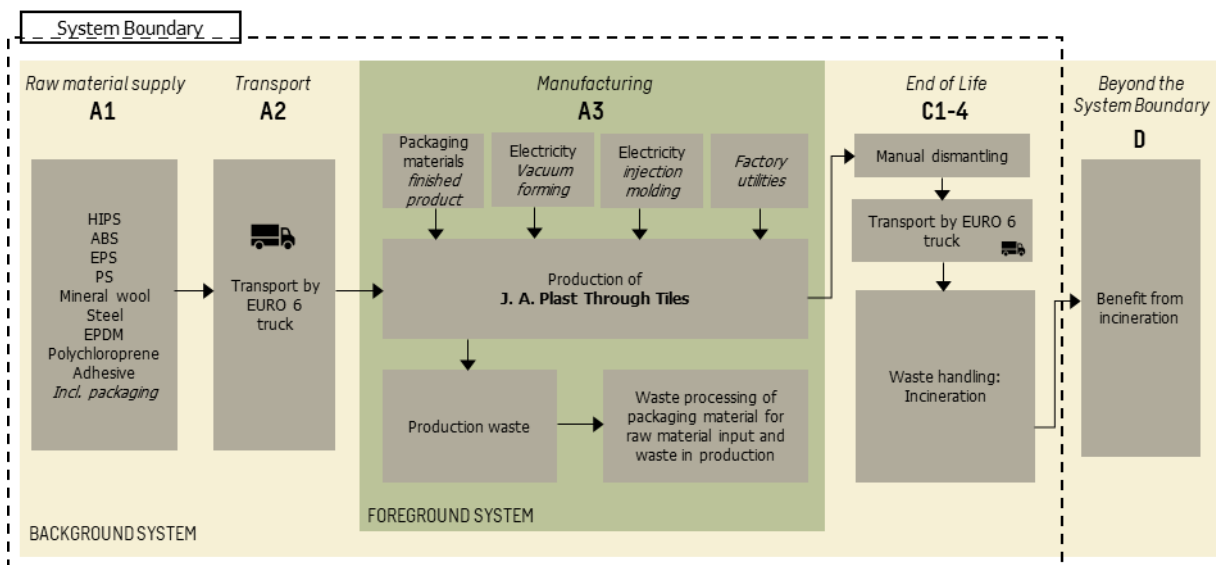
Foreground system:

No use of certified green electricity in the foreground system. The products are produced using electricity modelled as Danish residual electricity mix from 2021 in the production.

Background system:

No use of certified green electricity in the background system. Upstream processes are modelled using national energy mixes. Downstream processes are modelled using national energy mixes.

Flowdiagram



System boundary

This EPD is based on a cradle-to-gate LCA with life cycle modules A1-3, C1-4 and D declared, in which 100 weight-% has been accounted for.

The general rules for the exclusion of inputs and outputs follows the requirements in EN 15804, 6.3.5, where the total of neglected input flows per module shall be a maximum of 5 % of energy usage and mass and 1 % of energy usage and mass for unit processes. Packaging material for some of the raw materials in module A1 has been excluded as no data was available. This exclusion of data is in alignment with the requirements in EN 15804.

Product stage (A1-A3) includes:

A1 – Extraction and processing of raw materials

A2 – Transport to the production site

A3 – Manufacturing processes

The product stage includes the acquisition of raw materials, on-site manufacturing, external component sourcing, and assembly. J. A. Plast produces vacuum-shaped and injection molded components, purchasing plastic sheets and granulates. The vacuum shaping process generates approximately 50% waste, which is internally recycled. Packaging for materials, delivered on euro pallets, is not factored due to data unavailability.

The Bedsted facility's production involves plastic injection and vacuum shaping, with electricity for machinery and utilities included in the product stage. Post-assembly, J. A. Plast's products are packaged using EU pallets and cardboard, which are accounted for in module A3. EU pallets are assumed to be reused 25 times, and biogenic carbon content from cardboard and wood is calculated according to EN16485 standards.

Waste from production and raw material packaging is managed up to the "end-of-waste-state" in module A3, including a waste treatment breakdown

of 92% recycling, 4% incineration, and 4% landfill. According to EN15804+A2 §6.3.5.2, waste treatment benefits are not declared in module D but are reported within module A3.

End of Life (C1-C4) includes:

Module C1 is assumed to be zero using manual dismantling.

In C2, the transport distances scenario is set to 50 km by truck based on a Danish national scenario.

In module C3 the declared product is assumed to be incinerated.

Re-use, recovery and recycling potential (D) includes:

Module D includes reuse, recovery and/or recycling potential, expressed as net impact and benefits, due to reuse, recycling and incineration of materials with energy recovery in module C3.

The energy recovery is credited in module D and the energy recovered is based on the calorific values of the different raw materials. Datasets for energy recovery efficiency at the plant have been adjusted to be representative of the efficiency for heat and electricity recovery at Danish combined heating and power plants (CPH plant). The total efficiency for CHP plants in Denmark is around 85-90% (Hjørring Varmeforsyning, 2023), (Støvring Kraftvarmeværk, 2023), (Hofo, 2023), (Rambøll, 2023), (Lundgren, 2009). The efficiency for electricity is set to 43.5% and the efficiency for heat (steam) is set to 45.5%, which is based on average values from actual CHP plants in Denmark (Hjørring Varmeforsyning, 2023), (Støvring Kraftvarmeværk, 2023).

LCA results

ENVIRONMENTAL IMPACTS PER J. A. THROUGH TILE										
Parameter	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
GWP-total	[kg CO ₂ eq.]	6,13E+00	2,82E-02	2,52E+00	8,68E+00	0,00E+00	8,46E-03	6,37E+00	2,87E-05	-1,59E+00
GWP-fossil	[kg CO ₂ eq.]	6,12E+00	2,78E-02	4,17E+00	1,03E+01	0,00E+00	8,37E-03	6,37E+00	2,96E-05	-1,57E+00
GWP-biogenic	[kg CO ₂ eq.]	1,32E-02	6,37E-05	-1,65E+00	-1,64E+00	0,00E+00	1,92E-05	1,61E-04	-1,02E-06	-2,02E-02
GWP-luluc	[kg CO ₂ eq.]	8,46E-04	2,61E-04	4,66E-03	5,77E-03	0,00E+00	7,84E-05	7,06E-06	9,33E-08	-5,16E-04
ODP	[kg CFC 11 eq.]	1,62E-09	3,67E-15	2,43E-09	4,05E-09	0,00E+00	9,94E-16	7,44E-13	7,64E-17	-2,87E-11
AP	[mol H+ eq.]	8,37E-03	4,20E-05	7,21E-03	1,56E-02	0,00E+00	1,26E-05	5,94E-04	2,13E-07	-5,54E-03
EP-freshwater	[kg P eq.]	2,52E-05	1,03E-07	2,80E-05	5,33E-05	0,00E+00	2,79E-08	9,04E-08	6,05E-11	-2,15E-05
EP-marine	[kg N eq.]	2,41E-03	1,53E-05	2,35E-03	4,77E-03	0,00E+00	4,60E-06	1,40E-04	5,51E-08	-1,81E-03
EP-terrestrial	[mol N eq.]	2,59E-02	1,81E-04	2,39E-02	5,00E-02	0,00E+00	5,44E-05	2,81E-03	6,06E-07	-1,54E-02
POCP	[kg NMVOC eq.]	1,46E-02	3,69E-05	6,32E-03	2,10E-02	0,00E+00	1,11E-05	4,05E-04	1,66E-07	-4,08E-03
ADPm1	[kg Sb eq.]	1,37E-06	1,87E-09	4,59E-07	1,83E-06	0,00E+00	5,06E-10	2,49E-09	1,39E-12	-5,54E-07
ADPf1	[MJ]	1,82E+02	3,84E-01	5,68E+01	2,39E+02	0,00E+00	1,15E-01	7,30E-01	4,00E-04	-2,17E+01
WDP1	[m ³]	5,85E-01	3,41E-04	5,80E-01	1,17E+00	0,00E+00	1,02E-04	5,20E-01	3,30E-06	-2,85E-01
Caption	<p>GWP-total = Global Warming Potential - total; GWP-fossil = Global Warming Potential - fossil fuels; GWP-biogenic = Global Warming Potential - biogenic; GWP-luluc = Global Warming Potential - land use and land use change; ODP = Ozone Depletion; AP = Acidification; EP-freshwater = Eutrophication – aquatic freshwater; EP-marine = Eutrophication – aquatic marine; EP-terrestrial = Eutrophication – terrestrial; POCP = Photochemical zone formation; ADPm = Abiotic Depletion Potential – minerals and metals; ADPf = Abiotic Depletion Potential – fossil fuels; WDP = water use</p>									
Disclaimer	<p>¹ The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.</p>									

ADDITIONAL ENVIRONMENTAL IMPACTS PER J. A. THROUGH TILE										
Parameter	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
PM	[Disease incidence]	5,93E-08	3,48E-10	1,01E-07	1,60E-07	0,00E+00	1,05E-10	3,45E-09	2,62E-12	-4,10E-08
IRP2	[kBq U235 eq.]	1,91E-01	1,02E-04	3,10E-01	5,02E-01	0,00E+00	2,87E-05	6,65E-03	2,63E-07	-1,98E-01
ETP-fw1	[CTUe]	8,63E+01	2,75E-01	8,36E+00	9,49E+01	0,00E+00	8,26E-02	2,89E-01	2,16E-04	-5,27E+00
HTP-c1	[CTUh]	5,19E-09	5,58E-12	5,51E-10	5,74E-09	0,00E+00	1,68E-12	3,63E-11	3,36E-14	-1,04E-09
HTP-nc1	[CTUh]	7,22E-08	2,48E-10	1,50E-08	8,74E-08	0,00E+00	7,46E-11	3,90E-10	3,55E-12	-1,29E-08
SQP1	-	6,34E+00	1,52E-01	7,32E+01	7,96E+01	0,00E+00	4,29E-02	2,18E-01	4,86E-05	-1,03E+02
Caption	PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Soil Quality (dimensionless)									
Disclaimers	<p>1 The results of this environmental indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.</p> <p>2 This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.</p>									

RESOURCE USE PER J. A. THROUGH TILE										
Parameter	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
PERE	[MJ]	3,61E+00	8,25E-03	3,33E+01	3,69E+01	0,00E+00	1,82E-03	5,26E-02	0,00E+00	-2,19E+01
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]	7,63E+01	1,33E-01	4,90E+01	1,25E+02	0,00E+00	3,79E-02	2,40E-01	2,00E-04	-8,26E+00
PENRE	[MJ]	1,77E-01	0,00E+00	-8,84E-04	1,76E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRM	[MJ]	7,65E+01	1,33E-01	4,90E+01	1,26E+02	0,00E+00	3,79E-02	2,40E-01	2,00E-04	-8,26E+00
PENRT	[MJ]	1,82E+02	3,85E-01	5,68E+01	2,39E+02	0,00E+00	1,16E-01	7,30E-01	4,00E-04	-2,17E+01
SM	[kg]	2,44E-01	0,00E+00	1,49E+00	1,74E+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
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	[m³]	2,66E-02	3,06E-05	2,84E-02	5,50E-02	0,00E+00	9,20E-06	1,22E-02	1,01E-07	-1,65E-02
Caption	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; PENRE = Use of non renewable primary energy excluding non renewable primary energy resources used as raw materials; PENRM = 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 secondary fuels; NRSF = Use of non renewable secondary fuels; FW = Net use of fresh water									

WASTE CATEGORIES AND OUTPUT FLOWS PER J. A. THROUGH TILE										
Parameter	Unit	A1	A2	A3	A1-A3	C1	C2	C3	C4	D
HWD	[kg]	1,20E-05	1,13E-12	3,05E-07	1,23E-05	0,00E+00	3,19E-13	1,63E-11	4,36E-15	1,52E-08
NHWD	[kg]	9,53E-02	5,57E-05	5,29E-02	1,48E-01	0,00E+00	1,57E-05	3,71E-02	1,00E-03	-8,34E-02
RWD	[kg]	1,35E-03	6,84E-07	2,51E-03	3,86E-03	0,00E+00	1,93E-07	4,13E-05	2,28E-09	-1,74E-03
CRU	[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

MFR	[kg]	1,44E-03	0,00E+00	8,07E-01	8,08E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MER	[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
EEE	[MJ]	0,00E+00	0,00E+00	6,35E-03	6,35E-03	0,00E+00	0,00E+00	2,23E+01	0,00E+00	0,00E+00
EET	[MJ]	0,00E+00	0,00E+00	6,64E-03	6,64E-03	0,00E+00	0,00E+00	2,33E+01	0,00E+00	0,00E+00
Caption	HWD = Hazardous waste disposed; NHWD = Non hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy									

BIOGENIC CARBON CONTENT PER J. A. THROUGH TILE		
Parameter	Unit	At the factory gate
Biogenic carbon content in product	[kg C]	0,00E+00
Biogenic carbon content in accompanying packaging	[kg C]	1,02E+00
Note	1 kg biogenic carbon is equivalent to 44/12 kg of CO ₂	

Additional information

LCA interpretation

The results in accordance with DS/EN 15804+A2 show that the life cycle modules A1-A3 have the largest contribution to all 13 core environmental impact categories.

For the declared products the results shows that the vacuum shaped components have the largest contribution in 8 of the 13 core environmental impact categories. The vacuum shaping process has a high energy consumption, which has a large contribution to the emissions of that group. the process of packaging has the largest contribution to the impact category of Climate Change biogenic, due to the use of the biogenic materials of wood and cardboard. The EoL has a high impact due to the high share of incineration.

Technical information on scenarios

Reference service life

RSL information		Unit
Reference service Life	-	Years

End of life (C1-C4)

Scenario information	Value	Unit
Collected separately	-	kg
Collected with mixed waste	0,424-0,632	kg
For reuse	-	kg
For recycling	-	kg
For energy recovery	0,424-0,632	kg
For final disposal	-	kg

Re-use, recovery and recycling potential (D)

Scenario information/Materiel	Value	Unit
Displaced material	-	kg
Energy recovery from waste incineration	0,364-0,510	kg

Indoor air

The EPD does not give information on release of dangerous substances to indoor air because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A1 chapter 7.4.1.

Soil and water

The EPD does not give information on release of dangerous substances to soil and water because the horizontal standards on the relevant measurements are not available. Read more in EN15804+A1 chapter 7.4.2.

References

<p>Publisher</p>	<p> epddanmark</p> <p>www.epddanmark.dk <small>Template version 2023.2</small></p>
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<p>LCA-practitioner</p>	<p><i>Julie Hald</i> <i>Nana Lin Rasmusen</i></p> <p>Sweco A/S Ørestads Blvd. 41, 2300 København, Denmark</p>
<p>LCA software / background data</p>	<p>LCA for Experts (LCA FE) version 10.7.</p> <p>Generic data are primarily based on life cycle inventory data from Spheras database Managed LCA Content (MLC) version 2023.1 and Ecoinvent database 3.8.</p>
<p>3rd party verifier</p>	<p>Guangli Du BUILD – Institut for Byggeri, By og Miljø, Aalborg Universitet København</p>

General programme instructions

General Programme Instructions, version 2.0, spring 2020
www.epddanmark.dk

EN 15804

DS/EN 15804 + A2:2019 - "Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products"

EN 15942

DS/EN 15942:2011 – " Sustainability of construction works – Environmental product declarations – Communication format business-to-business"

ISO 14025

DS/EN ISO 14025:2010 – " Environmental labels and declarations – Type III environmental declarations – Principles and procedures"

ISO 14040

DS/EN ISO 14040:2008 – " Environmental management – Life cycle assessment – Principles and framework"

ISO 14044

DS/EN ISO 14044:2008 – “ Environmental management – Life cycle assessment – Requirements and guidelines”

References

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