epddanmark

ECO PLATFORM EPD VERIFIED

Owner: J.A. Plastindustri ApS
No.: MD-25063-EN
Issued: 28-05-2025
Valid to: 28-05-2030

3rd PARTY **VERIFIED**

EPD

VERIFIED ENVIRONMENTAL PRODUCT DECLARATION | **ISO 14025 & EN 15804**

Owner of declaration
J.A. Plastindustri ApS
Vestervigvej 163, DK-7755 Bedsted
CVR no.: 65699818
Forside - J.A. PLAST (japlast.com)

Programme
EPD Danmark
www.epddanmark.dk

☐ Industry EPD
☐ Product EPD

☒ Product specific
☐ Average
☐ Worst Case

Declared product(s)
- Mono Ridge (RA8)
- Apron (RA9)
- Hinge Ridge (RA10)

Number of declared datasets/product variations: 3

Production site
Vestervigvej 163
7755 Bedsted
Denmark

Use of Guarantees of Origin
☒ No certificates used
☐ Electricity covered by GoO
☐ Biogas covered by GoO

Declared/ functional unit
1 psc of J.A. Plast roof accessories: Rigid abutment / flashing

Year of production site data (A3)
2023

EPD version
Version 1.0

Issued: 28-05-2025
Valid to: 28-05-2030

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

☐ internal ☒ 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	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X

Product information

Product description

The main product components are shown in the table below. The material compositions for the declared unit of 1 piece of J.A. Plast Roofing Accessory, in the category of Rigid abutment / flashing, only consist of one raw material, which is HIPS (plastic) sheets, formed into the shape of each product.

Besides the raw material inputs, the packaging material for the input materials are also included in the life cycle assessment.

Material	Weight-% of declared product		
	Mono Ridge RA8	**Apron** RA9	**Hinge Ridge** RA10
HIPS sheets	100%	100%	100%

Product packaging:

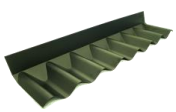
The composition of the sales- and transport packaging of the products is shown in the table below.

Material	Weight of packaging material (kg)			Weight-% of packaging
	Mono Ridge RA8	**Apron** RA9	**Hinge Ridge** RA10	
Euro pallet	0.0650	0.0163	0.0325	46%
Cardboard	0.0768	0.0192	0.0384	54%
Total	**0.1418**	**0.0355**	**0.0709**	100%

Representativity

This declaration, including data collection and the modeled foreground system including results, represents the production of J.A. Plast Rigid abutment / flashing products on the production site located in Bedsted, Denmark. Product specific data are based on average values collected in the period January 2023 to December 2023.

Picture of product(s)

Mono Ridge	Apron	Hinge Ridge
RA8	**RA9**	**RA10**
		

This EPD represents 3 different types of roof accessories from J.A. Plast in the category of Rigid abutment / flashing products. Each product has been modelled separately, and the results are presented in this EPD for each product.

Background data are based on Ecoinvent database version 3.10 and are less than 10 years old. Generally, the used background datasets are of good quality, and the majority of the datasets are only a couple of years old.

Hazardous substances

J.A. Plast Rigid abutment / flashing products does 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 Rigid abutment / flashing products, as mono ridge, hinge ridge and apron, is used to finish the ridge as apron against wall or chimney. The products are permanently integrated in the building as a part of the building envelope.

Essential characteristics

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

https://japlast.com/

Reference Service Life (RSL)

N/A

LCA background

Declared unit

The LCI and LCIA results in this EPD relates to 1 piece of J.A. Plast Roof Accessories: Rigid abutment/flashing products. The declared products come in different product types, sizes and shapes. The LCA results are presented for each product, in the unit 1 piece.

Name	No.	Value	Unit
Mono Ridge	RA8	1	pcs
Apron	RA9	1	pcs
Hinge Ridge	RA10	1	pcs

Functional unit

Not defined.

Material properties

Name	No.	Mass factor (kg/DU)
Mono Ridge	RA8	1.98
Apron	RA9	0.90
Hinge Ridge	RA10	1.19

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.

Conversion factors

Name	No.	Conversion factor to 1 kg
Mono Ridge	RA8	0.5
Apron	RA9	1.1
Hinge Ridge	RA10	0.8

Energy modelling principles

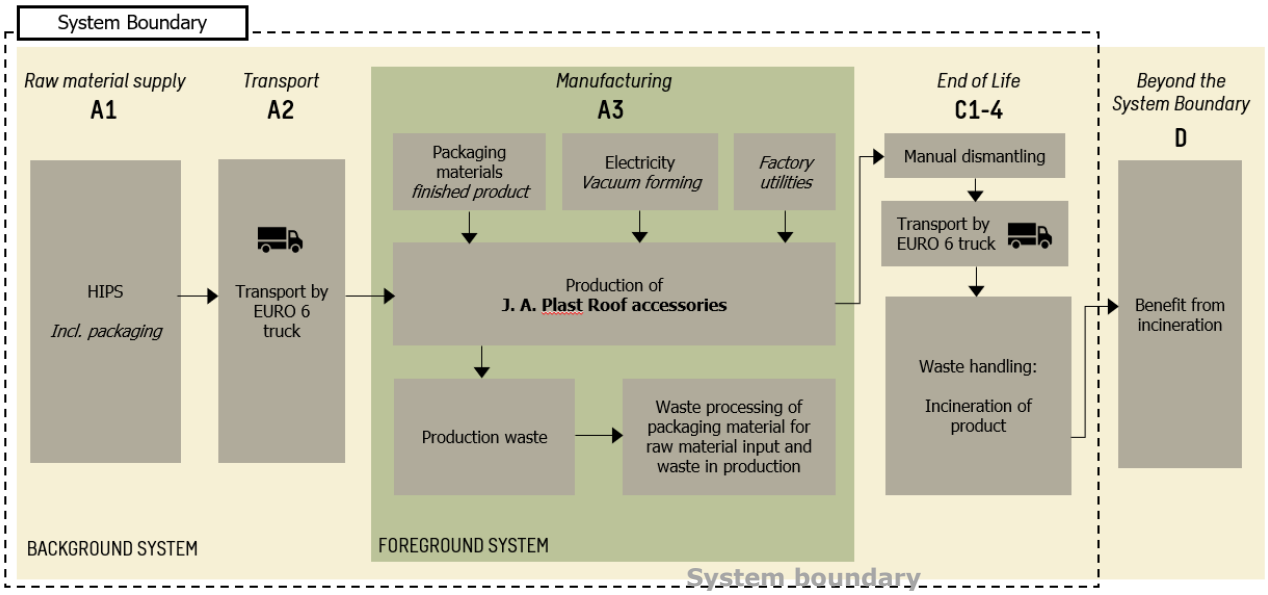
Foreground system:
No green electricity or biogas certificates (GOs) are used to model the energy in this LCA study. The electricity in the foreground system (product stage, modules A1-A3) is modelled based on the Danish residual electricity mix from 2022.

Information about the energy mix in the foreground system:

Energy mix	EF	Unit
Residual grid mix	0.632	kg CO_2e/kWh
Natural gas	0.0267	kg CO_2e/MJ

Background system: Upstream and 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.

Product stage (A1-A3) includes:

A1 – Extraction and processing of raw materials
A2 – Transport to the production site
A3 – Manufacturing processes

The product stage comprises the acquisition of all raw materials, products and energy, transport to the production site in Bedsted, Denmark, packaging and waste processing up to the ”end-of-waste” state or final disposal. The LCA results are declared in aggregated form for the product stage, which means, that the sub-modules A1, A2 and A3 are declared as one module A1-A3. The Bedsted facility's production involves plastic vacuum forming, with electricity for machinery and utilities included in the product stage. The component parts are produced by HIPS sheets being cut to size and vacuum formed into the shape of each product component parts. The offcuts are granulated and used as input in other processes in the factory. The HIPS sheets include secondary material in the input raw material from the supplier. The input of secondary material is 15% for the HIPS sheets.

All machines in the production process run on electricity. The factory’s utilities, including electricity, heating, cooling, and water, are also accounted for in the calculation. The factory is heated by a combination of electricity and an oil furnace. Mass-based allocation has been used for partitioning processes for factory utilities. The total mass of produced products from sheets is used for allocation of the factory utilities. Also, mass-based allocation has been used for partitioning processes for the vacuum forming.

The finished product is packaged in cardboard boxes and dispatched to customers on Euro pallets, 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.
The packaging materials for the raw material input appearing in module A1, the plastic waste in production is treated 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 modelled to be incinerated, as it is assumed that the product is sorted as combustible small waste and sent for incineration at a combined heat and power plant.

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.
In module D the incineration potential is expressed as a net impact from the incineration of the material with an incineration rate of 100%. The secondary material input in the HIPS sheets is subtracted from the mass of the declared unit as this cannot have a credit in module D.
The energy recovery is credited in module D and the energy recovered is based on the calorific value of the raw material. 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), (Hofor, 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

Results following EN15804:2012+A2:2019

J.A. Plast Product RA8 - Mono Ridge

ENVIRONMENTAL IMPACTS PER PCS.										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	1.41E+01	9.81E-02	1.03E+01	2.44E+01	0.00E+00	1.88E-02	6.34E+00	0.00E+00	-2.11E+00
GWP-fossil	kg CO_2 eq.	1.40E+01	9.80E-02	1.00E+01	2.42E+01	0.00E+00	1.88E-02	6.34E+00	0.00E+00	-2.03E+00
GWP-biogenic	kg CO_2 eq.	4.24E-02	6.79E-05	2.34E-01	2.76E-01	0.00E+00	1.30E-05	7.84E-05	0.00E+00	-8.21E-02
GWP-luluc	kg CO_2 eq.	2.41E-03	3.25E-05	1.92E-03	4.36E-03	0.00E+00	6.25E-06	8.61E-06	0.00E+00	-5.46E-03
ODP	kg CFC 11 eq.	6.01E-08	1.95E-09	1.43E-07	2.05E-07	0.00E+00	3.74E-10	6.77E-09	0.00E+00	-8.02E-08
AP	mol H^+ eq.	5.74E-02	2.04E-04	3.65E-02	9.42E-02	0.00E+00	3.92E-05	7.85E-04	0.00E+00	-5.96E-03
EP-freshwater	kg P eq.	9.87E-05	7.65E-07	4.92E-04	5.92E-04	0.00E+00	1.47E-07	9.71E-07	0.00E+00	-9.22E-05
EP-marine	kg N eq.	9.10E-03	4.78E-05	5.99E-03	1.51E-02	0.00E+00	9.18E-06	3.68E-04	0.00E+00	-1.30E-03
EP-terrestrial	mol N eq.	9.95E-02	5.29E-04	6.89E-02	1.69E-01	0.00E+00	1.02E-04	3.95E-03	0.00E+00	-1.72E-02
POCP	kg NMVOC eq.	4.04E-02	3.39E-04	2.10E-02	6.18E-02	0.00E+00	6.52E-05	9.48E-04	0.00E+00	-4.91E-03
ADPm[1]	kg Sb eq.	3.93E-06	3.19E-07	7.36E-05	7.78E-05	0.00E+00	6.13E-08	6.36E-08	0.00E+00	-1.11E-05
ADPf[1]	MJ	3.74E+01	1.15E-01	9.20E+01	1.29E+02	0.00E+00	2.20E-02	6.59E-01	0.00E+00	-1.47E+01
WDP[1]	m^3 world eq. deprived	7.75E+00	5.72E-03	1.30E+00	9.05E+00	0.00E+00	1.10E-03	2.19E-02	0.00E+00	-3.66E-01
Caption		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 = Acidifcation; 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								
Disclaimer		[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.								

ADDITIONAL ENVIRONMENTAL IMPACTS PER PCS.										
Parameter	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PM	[Disease incidence]	5.96E-07	7.18E-09	1.36E-07	7.39E-07	0.00E+00	1.38E-09	3.61E-09	0.00E+00	-4.32E-08
IRP[2]	[kBq U235 eq.]	8.77E-02	6.36E-04	4.28E-01	5.17E-01	0.00E+00	1.22E-04	9.41E-04	0.00E+00	-2.04E-01
ETP-fw[1]	[CTUe]	8.71E+00	3.75E-01	2.71E+01	3.62E+01	0.00E+00	7.21E-02	5.13E+00	0.00E+00	-6.28E+00
HTP-c[1]	[CTUh]	4.44E-09	6.96E-10	1.38E-08	1.89E-08	0.00E+00	1.34E-10	4.05E-10	0.00E+00	-6.32E-09
HTP-nc[1]	[CTUh]	2.15E-08	8.66E-10	1.10E-07	1.33E-07	0.00E+00	1.66E-10	1.42E-08	0.00E+00	-1.88E-08
SQP[1]	-	5.37E+00	8.33E-01	2.21E+01	2.83E+01	0.00E+00	1.60E-01	1.36E-01	0.00E+00	-3.57E+01
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								
Disclaimers		[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. [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.								

RESOURCE USE PER PCS.										
Parameter	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	[MJ]	2.26E+00	2.29E-02	1.34E+01	1.57E+01	0.00E+00	4.40E-03	1.15E-02	0.00E+00	-2.92E+01
PERM	[MJ]	1.69E+00	0.00E+00	2.30E-01	1.92E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	3.95E+00	2.29E-02	1.37E+01	1.76E+01	0.00E+00	4.40E-03	1.15E-02	0.00E+00	-2.92E+01
PENRE	[MJ]	2.25E+02	1.38E+00	1.37E+02	3.64E+02	0.00E+00	2.65E-01	7.73E+01	0.00E+00	-3.34E+01
PENRM	[MJ]	7.68E+01	0.00E+00	-1.49E-01	7.66E+01	0.00E+00	0.00E+00	-7.66E+01	0.00E+00	0.00E+00
PENRT	[MJ]	3.02E+02	1.38E+00	1.37E+02	4.40E+02	0.00E+00	2.65E-01	6.58E-01	0.00E+00	-3.34E+01
SM	[kg]	7.04E-01	0.00E+00	6.15E-02	7.66E-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]	4.14E-02	2.07E-04	3.32E-02	7.49E-02	0.00E+00	3.98E-05	1.38E-03	0.00E+00	-8.33E-03
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 PCS.										
Parameter	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	[kg]	1.26E-02	3.45E-05	6.98E-03	1.96E-02	0.00E+00	6.63E-06	4.45E-02	0.00E+00	-2.44E-03
NHWD	[kg]	9.65E-02	6.66E-02	3.45E-01	5.08E-01	0.00E+00	1.28E-02	4.83E-02	0.00E+00	-1.32E-01
RWD	[kg]	5.33E-05	4.44E-07	3.00E-04	3.54E-04	0.00E+00	8.54E-08	1.32E-06	0.00E+00	-1.05E-04
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]	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
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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.33E+01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.49E+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 PCS.		
Parameter	**Unit**	**At the factory gate**
Biogenic carbon content in product	kg C	0.00E+00
Biogenic carbon content in accompanying packaging	kg C	6.28E-02

J.A. Plast Product RA9 - Apron

ENVIRONMENTAL IMPACTS PER PCS.										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	6.40E+00	4.45E-02	4.67E+00	1.11E+01	0.00E+00	8.56E-03	2.88E+00	0.00E+00	-9.60E-01
GWP-fossil	kg CO_2 eq.	6.38E+00	4.45E-02	4.53E+00	1.10E+01	0.00E+00	8.55E-03	2.88E+00	0.00E+00	-9.20E-01
GWP-biogenic	kg CO_2 eq.	1.93E-02	3.08E-05	1.38E-01	1.58E-01	0.00E+00	5.92E-06	3.56E-05	0.00E+00	-3.73E-02
GWP-luluc	kg CO_2 eq.	1.10E-03	1.48E-05	7.35E-04	1.85E-03	0.00E+00	2.84E-06	3.91E-06	0.00E+00	-2.48E-03
ODP	kg CFC 11 eq.	2.73E-08	8.85E-10	6.43E-08	9.25E-08	0.00E+00	1.70E-10	3.08E-09	0.00E+00	-3.64E-08
AP	mol H^+ eq.	2.61E-02	9.27E-05	1.65E-02	4.27E-02	0.00E+00	1.78E-05	3.57E-04	0.00E+00	-2.71E-03
EP-freshwater	kg P eq.	4.48E-05	3.47E-07	2.22E-04	2.67E-04	0.00E+00	6.67E-08	4.41E-07	0.00E+00	-4.19E-05
EP-marine	kg N eq.	4.13E-03	2.17E-05	2.69E-03	6.84E-03	0.00E+00	4.17E-06	1.67E-04	0.00E+00	-5.89E-04
EP-terrestrial	mol N eq.	4.52E-02	2.40E-04	3.10E-02	7.64E-02	0.00E+00	4.62E-05	1.79E-03	0.00E+00	-7.79E-03
POCP	kg NMVOC eq.	1.84E-02	1.54E-04	9.47E-03	2.80E-02	0.00E+00	2.96E-05	4.31E-04	0.00E+00	-2.23E-03
ADPm[1]	kg Sb eq.	1.79E-06	1.45E-07	3.33E-05	3.53E-05	0.00E+00	2.78E-08	2.89E-08	0.00E+00	-5.04E-06
ADPf[1]	MJ	1.70E+01	5.20E-02	4.17E+01	5.87E+01	0.00E+00	1.00E-02	2.99E-01	0.00E+00	-6.69E+00
WDP[1]	m^3 world eq. deprived	3.52E+00	2.60E-03	5.82E-01	4.10E+00	0.00E+00	4.99E-04	9.93E-03	0.00E+00	-1.66E-01
Caption		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 = Acidifcation; 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								
Disclaimer		[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.								

ADDITIONAL ENVIRONMENTAL IMPACTS PER PCS.										
Parameter	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PM	[Disease incidence]	2.70E-07	3.26E-09	6.11E-08	3.35E-07	0.00E+00	6.27E-10	1.64E-09	0.00E+00	-1.96E-08
IRP[2]	[kBq U235 eq.]	3.98E-02	2.89E-04	1.94E-01	2.34E-01	0.00E+00	5.55E-05	4.27E-04	0.00E+00	-9.27E-02
ETP-fw[1]	[CTUe]	3.96E+00	1.70E-01	1.21E+01	1.63E+01	0.00E+00	3.27E-02	2.33E+00	0.00E+00	-2.85E+00
HTP-c[1]	[CTUh]	2.01E-09	3.16E-10	6.16E-09	8.50E-09	0.00E+00	6.07E-11	1.84E-10	0.00E+00	-2.87E-09
HTP-nc[1]	[CTUh]	9.75E-09	3.93E-10	4.98E-08	6.00E-08	0.00E+00	7.55E-11	6.45E-09	0.00E+00	-8.56E-09
SQP[1]	-	2.44E+00	3.78E-01	9.32E+00	1.21E+01	0.00E+00	7.27E-02	6.18E-02	0.00E+00	-1.62E+01
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								
Disclaimers		[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. [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.								

RESOURCE USE PER PCS.										
Parameter	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	[MJ]	1.03E+00	1.04E-02	6.36E+00	7.40E+00	0.00E+00	2.00E-03	5.24E-03	0.00E+00	-1.33E+01
PERM	[MJ]	7.67E-01	0.00E+00	-2.87E-01	4.80E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	1.79E+00	1.04E-02	6.08E+00	7.88E+00	0.00E+00	2.00E-03	5.24E-03	0.00E+00	-1.33E+01
PENRE	[MJ]	1.02E+02	6.26E-01	6.21E+01	1.65E+02	0.00E+00	1.20E-01	3.51E+01	0.00E+00	-1.52E+01
PENRM	[MJ]	3.49E+01	0.00E+00	-6.76E-02	3.48E+01	0.00E+00	0.00E+00	-3.48E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.37E+02	6.26E-01	6.20E+01	2.00E+02	0.00E+00	1.20E-01	2.99E-01	0.00E+00	-1.52E+01
SM	[kg]	3.20E-01	0.00E+00	1.54E-02	3.35E-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]	1.88E-02	9.42E-05	1.45E-02	3.34E-02	0.00E+00	1.81E-05	6.26E-04	0.00E+00	-3.78E-03
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 PCS.										
Parameter	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	[kg]	5.72E-03	1.57E-05	3.06E-03	8.79E-03	0.00E+00	3.01E-06	2.02E-02	0.00E+00	-1.11E-03
NHWD	[kg]	4.38E-02	3.02E-02	1.53E-01	2.27E-01	0.00E+00	5.81E-03	2.19E-02	0.00E+00	-5.99E-02
RWD	[kg]	2.42E-05	2.02E-07	1.36E-04	1.60E-04	0.00E+00	3.88E-08	5.99E-07	0.00E+00	-4.76E-05
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]	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
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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.51E+01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.58E+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 PCS.		
Parameter	**Unit**	**At the factory gate**
Biogenic carbon content in product	kg C	0.00E+00
Biogenic carbon content in accompanying packaging	kg C	1.57E-02

J.A. Plast Product RA10 - Hinge Ridge

ENVIRONMENTAL IMPACTS PER PCS.										
Indicator	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-total	kg CO_2 eq.	8.46E+00	5.89E-02	6.17E+00	1.47E+01	0.00E+00	1.13E-02	3.81E+00	0.00E+00	-1.27E+00
GWP-fossil	kg CO_2 eq.	8.43E+00	5.88E-02	6.01E+00	1.45E+01	0.00E+00	1.13E-02	3.81E+00	0.00E+00	-1.22E+00
GWP-biogenic	kg CO_2 eq.	2.55E-02	4.08E-05	1.56E-01	1.82E-01	0.00E+00	7.83E-06	4.71E-05	0.00E+00	-4.93E-02
GWP-luluc	kg CO_2 eq.	1.45E-03	1.95E-05	1.08E-03	2.55E-03	0.00E+00	3.75E-06	5.17E-06	0.00E+00	-3.28E-03
ODP	kg CFC 11 eq.	3.61E-08	1.17E-09	8.54E-08	1.23E-07	0.00E+00	2.25E-10	4.07E-09	0.00E+00	-4.81E-08
AP	mol H^+ eq.	3.45E-02	1.23E-04	2.19E-02	5.65E-02	0.00E+00	2.35E-05	4.71E-04	0.00E+00	-3.58E-03
EP-freshwater	kg P eq.	5.93E-05	4.59E-07	2.95E-04	3.55E-04	0.00E+00	8.82E-08	5.83E-07	0.00E+00	-5.54E-05
EP-marine	kg N eq.	5.46E-03	2.87E-05	3.58E-03	9.07E-03	0.00E+00	5.51E-06	2.21E-04	0.00E+00	-7.79E-04
EP-terrestrial	mol N eq.	5.97E-02	3.18E-04	4.12E-02	1.01E-01	0.00E+00	6.10E-05	2.37E-03	0.00E+00	-1.03E-02
POCP	kg NMVOC eq.	2.43E-02	2.04E-04	1.26E-02	3.70E-02	0.00E+00	3.91E-05	5.69E-04	0.00E+00	-2.95E-03
ADPm[1]	kg Sb eq.	2.36E-06	1.92E-07	4.41E-05	4.67E-05	0.00E+00	3.68E-08	3.82E-08	0.00E+00	-6.67E-06
ADPf[1]	MJ	2.24E+01	6.88E-02	5.52E+01	7.77E+01	0.00E+00	1.32E-02	3.95E-01	0.00E+00	-8.84E+00
WDP[1]	m^3 world eq. deprived	4.65E+00	3.43E-03	7.76E-01	5.43E+00	0.00E+00	6.60E-04	1.31E-02	0.00E+00	-2.19E-01
Caption		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 = Acidifcation; 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								
Disclaimer		[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.								

ADDITIONAL ENVIRONMENTAL IMPACTS PER PCS.										
Parameter	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PM	[Disease incidence]	3.58E-07	4.31E-09	8.14E-08	4.43E-07	0.00E+00	8.29E-10	2.16E-09	0.00E+00	-2.59E-08
IRP[2]	[kBq U235 eq.]	5.27E-02	3.82E-04	2.57E-01	3.10E-01	0.00E+00	7.34E-05	5.65E-04	0.00E+00	-1.23E-01
ETP-fw[1]	[CTUe]	5.23E+00	2.25E-01	1.62E+01	2.17E+01	0.00E+00	4.33E-02	3.08E+00	0.00E+00	-3.77E+00
HTP-c[1]	[CTUh]	2.66E-09	4.18E-10	8.24E-09	1.13E-08	0.00E+00	8.02E-11	2.43E-10	0.00E+00	-3.79E-09
HTP-nc[1]	[CTUh]	1.29E-08	5.20E-10	6.61E-08	7.95E-08	0.00E+00	9.99E-11	8.53E-09	0.00E+00	-1.13E-08
SQP[1]	-	3.22E+00	5.00E-01	1.29E+01	1.67E+01	0.00E+00	9.61E-02	8.17E-02	0.00E+00	-2.15E+01
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								
Disclaimers		[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. [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.								

RESOURCE USE PER PCS.										
Parameter	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	[MJ]	1.36E+00	1.38E-02	8.19E+00	9.57E+00	0.00E+00	2.64E-03	6.93E-03	0.00E+00	-1.75E+01
PERM	[MJ]	1.01E+00	0.00E+00	-5.42E-02	9.59E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	[MJ]	2.37E+00	1.38E-02	8.14E+00	1.05E+01	0.00E+00	2.64E-03	6.93E-03	0.00E+00	-1.75E+01
PENRE	[MJ]	1.35E+02	8.28E-01	8.23E+01	2.18E+02	0.00E+00	1.59E-01	4.64E+01	0.00E+00	-2.00E+01
PENRM	[MJ]	4.61E+01	0.00E+00	-8.93E-02	4.60E+01	0.00E+00	0.00E+00	-4.60E+01	0.00E+00	0.00E+00
PENRT	[MJ]	1.81E+02	8.28E-01	8.22E+01	2.64E+02	0.00E+00	1.59E-01	3.95E-01	0.00E+00	-2.00E+01
SM	[kg]	4.23E-01	0.00E+00	3.08E-02	4.53E-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]	2.49E-02	1.25E-04	1.97E-02	4.47E-02	0.00E+00	2.39E-05	8.28E-04	0.00E+00	-5.00E-03
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 PCS.										
Parameter	**Unit**	**A1**	**A2**	**A3**	**A1-A3**	**C1**	**C2**	**C3**	**C4**	**D**
HWD	[kg]	7.56E-03	2.07E-05	4.14E-03	1.17E-02	0.00E+00	3.98E-06	2.67E-02	0.00E+00	-1.46E-03
NHWD	[kg]	5.79E-02	4.00E-02	2.05E-01	3.03E-01	0.00E+00	7.68E-03	2.90E-02	0.00E+00	-7.92E-02
RWD	[kg]	3.20E-05	2.67E-07	1.80E-04	2.12E-04	0.00E+00	5.13E-08	7.93E-07	0.00E+00	-6.29E-05
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]	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
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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.00E+01	0.00E+00	0.00E+00
EET	[MJ]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.09E+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 PCS.		
Parameter	**Unit**	**At the factory gate**
Biogenic carbon content in product	kg C	0.00E+00
Biogenic carbon content in accompanying packaging	kg C	3.14E-02

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.
The environmental impact analysis show that the Production phase (A1-A3) has the most significant impact on the key environmental indicator GWP-total (Global Warming Potential). In contrast, the End-of-Life phase (C1-C4) contributes less in all impact categories.

The vacuum forming process has a high energy consumption, which has a large contribution to the emissions. Also, the raw material input of HIPS plastic impact the indicator GWP-total.

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.

For GWP-total and GWP-fossil the End-of-Life stage has a noteworthy impact, which is a result of incineration of the plastic material.

Technical information on scenarios

Reference service life

RSL information		Unit
Reference service Life	-	Years

End of life (C1-C4)

Scenario information	**Mono Ridge** RA8	**Apron** RA9	**Hinge Ridge** RA10	Unit
Collected separately	-	-	-	kg
Collected with mixed waste	1.982	0.900	1.190	kg
For reuse	-	-	-	kg
For recycling	-	-	-	kg
For energy recovery	1.723	0.783	1.035	kg
For final disposal	-	-	-	kg
Assumptions for scenario development	-	-	-	As appropriate

Re-use, recovery and recycling potential (D)

Scenario information	**Mono Ridge** RA8	**Apron** RA9	**Hinge Ridge** RA10	Unit
Displaced material	-	-	-	kg
Energy recovery from waste incineration	1.723	0.783	1.035	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

Publisher	epddanmark www.epddanmark.dk Template version 2024.2
Programme operator	Danish Technological Institute Gregersensvej DK-2630 Taastrup www.teknologisk.dk
LCA-practitioner	*Helene Frederiksen* *Nana Lin Rasmusen* *Sweco A/S Ørestads Blvd. 41,* *2300 København,* *Denmark*
LCA software /background data	Generic data are based on life cycle inventory data from Ecoinvent database 3.10. *EN 15804 reference package 3.1*
3rd party verifier	*Guangli Du* *BUILD – Institut for Byggeri, By og Miljø,* *Aalborg Universitet København.* Verified according to Verification Checklist 1 v. 2.8.

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”

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