

Environmental Product Declaration



In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for

alpha folieklæber foil adhesive

from

BetaPack A/S



Programme:

The International EPD® System, www.environdec.com

Programme operator:

EPD International AB
Box 210 60
SE-100 31 Stockholm
Sweden

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2029-07-18

EPD type:

EPD of multiple products, based on worst-case results

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com



General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): Construction Products, PCR 2019:14, Version 1.3.2. UN CPC code: Nr. 35420: Glues and gelatine, peptones and their derivatives, and related products; caseinates and other casein derivatives; albuminates and other albumin derivatives
PCR review was conducted by: The Technical Committee of the International EPD System. See www.environdec.com for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact
Life Cycle Assessment (LCA)
LCA accountability: Jannik Schulz, María Díaz Cáceres, brands & values GmbH, info@brandsandvalues.com
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: Third-party verifier: Jan Weinzettel, weinzettel@seznam.cz , Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD:

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Contact:

Jens Ravn Sørensen – js@betapack.dk

Description of the organisation:

BetaPack A/S is an independently owned Danish company located in Hørning close to Aarhus. Established in 1997 BetaPacks primary focus is in offering innovative and customized solutions to customers within two specific business areas: 1) Packaging solutions and 2) Building material solutions.

BetaPack A/S packaging solutions are sold directly to B2B customers within industrial and food (FMCG) segments. Our building material solutions are sold through builders' merchant with a focus on the professional craftsmen.

BetaPack A/S specializes in building material solutions that ensure a good indoor climate with a focus on:

- Airtightness
- Acoustic performance
- Ventilation
- Moisture and radon protection

Product-related or management system-related certifications:

All production sites are ISO 9001 certified.

Name and location of production site(s):

Hørning, Denmark and third-party affiliated contractors in Germany.

Product information

Product name:

alpha folieklæber

Product identification:

The alpha folieklæber is an adhesive for airtight connections of vapour control and air sealing membranes of all types.

Product description:

The alpha folieklæber is an aging-resistant acrylic copolymer and comes in a packaging of 600 ml foil tube or 310 ml cartridge. The alpha foil adhesive is a foil adhesive for airtight joints. The alpha folieklæber allows for a permanent airtight joint between the vapour barrier and adjacent building elements such as rear walls, decks and rafters. Aqueous dispersion based on acrylic acid copolymers. Does not contain ethanol.

UN CPC code:

Nr. 35420: „Glues and gelatine, peptones and their derivatives, and related products; caseinates and other casein derivatives; albuminates and other albumin derivatives“

Products covered by the EPD:

alpha folieklæber (310 ml / cartridge) GTIN 5712649413381

alpha folieklæber (600 ml / foil tube) GTIN 5712649000017

Geographical Scope:

Europe

Technical specifications:

Dispersion adhesive based on ageing-resistant acrylic copolymer, smooth paste-like, elastic and stretchable when cured, colour light brown.

Applications:

alpha foil adhesive is a foil adhesive for permanently airtight connections between vapour barriers and adjacent building components such as rear walls, ceilings and rafters. For all types of vapour barriers, PE, PA, PP and aluminium foils. Adheres to smooth and rough surfaces such as wood, plaster, masonry and concrete. The adhesive has a permanent bond and offers high strength. Suitable for wet and dry bonding.

Properties:

Permanently good adhesion, high strength combined with high elasticity. Free from solvents.

Technical specifications	Value & Unit
Typical consumption	31 – 50 ml/m
Density	1.06 g/cm ³
Colour	Light brown
Application temperature	-10 °C to +50 °C (adhesive temp. > 0 °C)
Temperature resistance	-40 °C to +80 °C

LCA information

The EPD conducted is for the worst-case scenario of the specific product alpha folieklæber (in cartridge packaging).

Declared unit: 1 kg of adhesive

Conversion factor to mass: no needed, as the declared unit is in kg

Reference service life: 50 years

Time representativeness: Based on yearly manufacturing data from 01/01/2020 until 31/12/2020.

Description of the manufacturing processes:

The production of the alpha folieklæber foil adhesive is done by mixing the components in a batch system under specific temperature, pressure and recipe. The adhesive is then packed in the cartridge for individual sale and transported to further distribution.

Database and LCA software used:

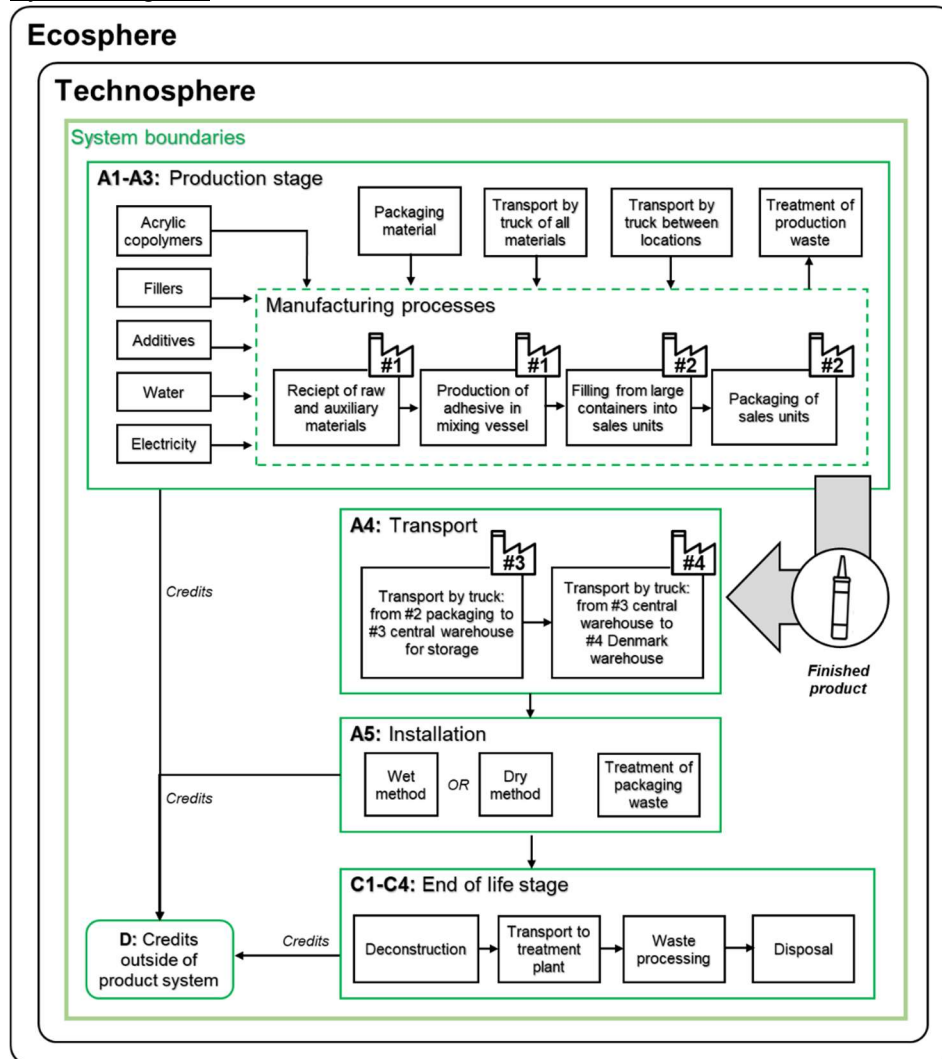
For the LCA model, the software system for holistic balancing (LCA for Experts) version 10.7 was used. Background data sets from the current version of the LCA for experts (GaBi) databases (Service pack 2023.2) were used entirely.

Description of system boundaries:

b) Cradle to gate with options, modules C1–C4, module D and with optional modules (A1–A3 + C + D and additional modules). The additional modules are A4 and A5.

- The biogenic C of the product packaging is balanced out in module A5
- Impacts of adhesive drying are included in module A5.
- Infrastructure and capital goods are excluded from the system boundaries.
- All processing steps and locations are balanced within the system boundaries.
- The LCI data manufacturing data was gathered for the specific declared product, and no co-product allocation was necessary.
- The allocation of waste follows the polluter-pays principle. The system boundary to the next product system is set when the waste reaches the end-of-waste state. The impacts of waste treatment from production are included in Module A3. The impacts of waste treatment during end-of-life are included in Module C3, where the product reaches the end-of-waste status.
- All the LCI data in Modules A1-A5 corresponds to primary data collected from the manufacturing plant and contracted suppliers, including material and energy inputs, and waste and emission outputs. This data is responsible for >90% of the GHG emissions.

System diagram:



Each processing step within the system boundaries is marked with an icon and number (#1, #2, #3, etc.), indicating the specific production site where it occurs. The system boundaries cover the following modules:

A1. Raw Material Supply

- Extraction and processing of raw materials required for manufacturing the defined liquid adhesive: Acrylic copolymers, fillers, additives and water.
- Extraction and processing of raw materials required for packaging the finished product liquid adhesive: Plastic parts (HDPE), cardboard, film (PE) and wood pallet.
- Extraction and processing of raw materials for internal packaging, used for transportation between all production locations. Particularly, transportation of the adhesive in different sizes of steel drums. Internal packaging also includes film (PE), PP, cardboard and wood pallet.
- Generation of electricity from primary energy resources to supply the production sites with energy.

A2. Transportation

- Transportation of the raw materials was modelled based on the providers specific locations and transportation via truck to the production site in Germany (#1). All materials are procured from providers within a distance of less than 1400 km.

- After the mixing batch vessel is completed, the adhesive is transported in large steel drums to the filling station (#2) for packing in the cartridges as individual sales units and then loaded on pallets. The transportation of raw materials for packaging, as well as the transportation of the large steel drums within Germany for filling, is modelled in Module A2.

A3. Manufacturing

- Manufacturing of the defined alpha folieklæber foil adhesive occurs in Germany.
- The production of the adhesive is done by mixing the components in a batch system, under specific temperature, pressure and recipe. The adhesive is transported in steel drums to the filling station, where the cartridge packaging is printed, assembled with the nozzle and plunger, and subsequently filled with adhesive. The products are then packed on pallets for further transportation.
- Treatment of waste generated from the manufacturing processes is included in the model. Processing up to the end-of waste status or disposal of final residues including any packaging not leaving the factory gate with the product was modelled in module A3. Resulting credits are assigned to module D.
- Electricity for production in module A3 is modelled with the German Residual electricity mix.

A4. Transport

- The transport of the packed product to the main logistics centre within Germany (#3), and consecutive transportation to Denmark (#4) is balanced in this module. The modelling is based on the providers specific locations and transportation via truck.

A5. Construction Installation

- The packaging waste resulting from the installation of the product in the construction site is sent for waste treatment.
- The expenses for installation and the transport expenses for disposal are also taken into account in module A5.
- The incineration of packaging waste receives credits for electricity and thermal energy generation, which are allocated in Module D.
- The loss of mass of the adhesive during drying was taken into account in module A5. The environmental impacts of such vapor outputs were included in the LCA.

C1-C4. End of Life

- The adhesive is treated as waste in module C3 by means of incineration with energy recovery.
- Module C2 contains the environmental impact of transportation of the product to the waste treatment plant.
- Module C3 contains the necessary processes for waste treatment at the end of the product life cycle.
- The loads for waste treatment are mapped here until the end of the waste property is reached.
- Emissions are assigned to module C3. Resulting credits are assigned to module D.

D. Reuse, recovery, recycling potential

- This product has no considerable benefits due to recycling or/and reuse, but considerable benefits from energy recovery in End of Life.
- The value flows resulting from the treatment of production waste in module A3, packaging waste in module A5 and the product in module C3, which can potentially serve as material or energy input for a downstream product system in the form of the energy recovered from the waste-to-energy treatment and material recovery, are accounted for completely in module D as credits outside of product system.

More information:

Additional information please contact: info@betapack.dk

LCA practitioner: brands & values GmbH, info@brandsandvalues.com

Electricity in A1-A3 accounts for less than 30% of the GWP-GHG results of modules A1-A3. The energy requirements for production were modelled using the Residual electricity mix of the electricity supplier on the market. In this case the LCA for Experts dataset of Residual grid mix; AC, technology mix; consumption mix, to consumer; <1kV in Germany from the reference year 2020. The climate impact of the selected German Residual grid mix is 0.674 kg CO₂ eq./kWh, using the GWP-GHG indicator as defined in the PCR.

Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation:

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	DE	DE	DE	EU	EU								EU	EU	EU	EU	EU
Specific data used	>90%																
Variation – products	-27.4%																
Variation – sites	0%																

Modules declared: (X = included; ND = not declared).

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Acrylic copolymers	0.899	0.0%	0.0%- 0 kg C/kg
Fillers	0.031	0.0%	0.0%- 0 kg C/kg
Additives	0.029	0.0%	0.0%- 0 kg C/kg
Water	0.041	0.0%	0.0%- 0 kg C/kg
Total product	1.000	0.0%	0.0%- 0 kg C/kg
Packaging materials	Weight, kg	Weight-% (versus the product)	Weight biogenic carbon, kg C/kg
Plastic parts (HDPE)	0.183	13.9%	0 kg C/kg
Cardboard	0.067	5.1%	0.028 kg C/kg
Film (PE)	0.001	0.1%	0 kg C/kg
Pallet	0.062	4.8%	0.028 kg C/kg
Total packaging	0.314	23.9%	0.056 kg C/kg
TOTAL Product with packaging	1.314	100%	

Dangerous substances from the candidate list of SVHC for Authorisation	EC No.	CAS No.	Weight-% per functional or declared unit
None	Not applicable	Not applicable	Not applicable

Environmental Information

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks. According to the EN 15804 standard, the characterization factors of EU-JRC must be applied. Version EF 3.1. of the characterization factors was used.

The characterization factors are available at the following internet connection:

<http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml>

Disclaimer: The use of the results of modules A1-A3 is discouraged without considering the results of modules C1-C4.

Potential environmental impact – mandatory indicators according to EN 15804

Results per functional or declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	1.89E+00	1.29E-01	5.79E-01	0.00E+00	4.89E-03	1.46E+00	0.00E+00	-8.38E-01
GWP-bio-genic	kg CO ₂ eq.	-2.04E-01	0.00E+00	2.04E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GWP-luluc	kg CO ₂ eq.	1.05E-01	1.19E-03	1.72E-05	0.00E+00	4.52E-05	3.34E-06	0.00E+00	-5.90E-05
GWP-total	kg CO ₂ eq.	1.79E+00	1.30E-01	7.84E-01	0.00E+00	4.94E-03	1.46E+00	0.00E+00	-8.38E-01
ODP	kg CFC 11 eq.	8.82E-08	1.67E-14	2.76E-14	0.00E+00	6.35E-16	1.06E-13	0.00E+00	-6.18E-12
AP	mol H ⁺ eq.	6.18E-03	2.33E-04	6.00E-05	0.00E+00	8.01E-06	1.83E-04	0.00E+00	-1.12E-03
EP-freshwater	kg P eq.	2.22E-05	4.69E-07	1.30E-08	0.00E+00	1.78E-08	2.93E-08	0.00E+00	-1.31E-06
EP-marine	kg N eq.	2.89E-03	9.35E-05	1.31E-05	0.00E+00	3.11E-06	5.41E-05	0.00E+00	-3.09E-04
EP-terrestrial	mol N eq.	2.03E-02	1.07E-03	2.82E-04	0.00E+00	3.58E-05	8.66E-04	0.00E+00	-3.27E-03
POCP	kg NMVOC eq.	5.69E-03	2.09E-04	3.82E-05	0.00E+00	7.14E-06	1.49E-04	0.00E+00	-8.87E-04
ADP-minerals&metals	kg Sb eq.	3.61E-06	8.51E-09	3.73E-10	0.00E+00	3.24E-10	9.75E-10	0.00E+00	-3.71E-07
ADP-fossil ¹	MJ	5.02E+01	1.75E+00	9.31E-02	0.00E+00	6.65E-02	2.69E-01	0.00E+00	-1.50E+01
WDP	m ³	5.08E-01	1.55E-03	5.33E-02	0.00E+00	5.90E-05	1.45E-01	0.00E+00	-7.77E-02
Acronyms	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 = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption								

¹ Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG	kg CO ₂ eq.	1.99E+00	1.30E-01	5.79E-01	0.00E+00	4.94E-03	1.46E+00	0.00E+00	-8.38E-01
PM	Disease incidence	ND	ND	ND	ND	ND	ND	ND	ND
IR	kBq U235 eq.	ND	ND	ND	ND	ND	ND	ND	ND
ETP-fw	CTUe	ND	ND	ND	ND	ND	ND	ND	ND
HTP-c	CTUh	ND	ND	ND	ND	ND	ND	ND	ND
HTP-nc	CTUh	ND	ND	ND	ND	ND	ND	ND	ND
SQP	dimensionless	ND	ND	ND	ND	ND	ND	ND	ND
Acronyms	GWP-GHG = This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO ₂ is set to zero; PM = Particulate matter emissions; IR = Ionizing radiation, human health; ETP-fw = Eco-toxicity - freshwater; HTP-c = Human toxicity, cancer effect; HTP-nc = Human toxicity, non-cancer effects; SQP = Land use related impacts/Soil quality								

Use of resources

Results per functional or declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	8.85E+00	1.27E-01	2.27E+00	0.00E+00	4.84E-03	6.73E-02	0.00E+00	-4.22E+00
PERM	MJ	2.25E+00	0.00E+00	-2.25E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	1.11E+01	1.27E-01	1.93E-02	0.00E+00	4.84E-03	6.73E-02	0.00E+00	-4.22E+00
PENRE	MJ	1.77E+01	1.76E+00	8.10E+00	0.00E+00	6.67E-02	2.49E+01	0.00E+00	-1.50E+01
PENRM	MJ	3.26E+01	0.00E+00	-8.01E+00	0.00E+00	0.00E+00	-2.46E+01	0.00E+00	0.00E+00
PENRT	MJ	5.03E+01	1.76E+00	9.32E-02	0.00E+00	6.67E-02	2.69E-01	0.00E+00	-1.50E+01
SM	kg	8.25E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.13E-02
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
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
FW	m ³	1.59E-02	1.39E-04	1.25E-03	0.00E+00	5.30E-06	3.40E-03	0.00E+00	-9.01E-03
Acronyms	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 = Use of net fresh water								

The indicator value for PENRM in C3 is negative, as the non-renewable primary energy resources used as raw materials leave the product system.

Waste production and output flows

Waste production

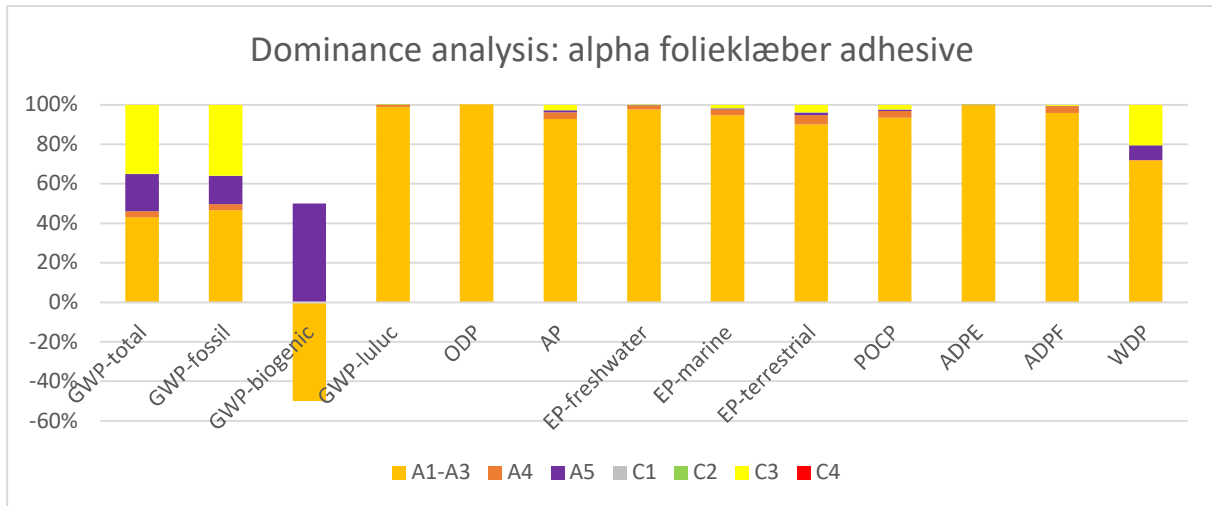
Results per functional or declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	3.09E-05	5.43E-12	1.62E-12	0.00E+00	2.07E-13	6.58E-12	0.00E+00	-4.89E-09
Non-hazardous waste disposed	kg	4.68E-02	2.68E-04	2.29E-03	0.00E+00	1.02E-05	1.70E-02	0.00E+00	-4.71E-04
Radioactive waste disposed	kg	1.01E-03	3.28E-06	4.18E-06	0.00E+00	1.25E-07	1.56E-05	0.00E+00	-1.11E-03

Output flows

Results per functional or declared unit									
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	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
Material for recycling	kg	5.65E-02	0.00E+00	6.70E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	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
Exported energy, electricity	MJ	4.96E-02	0.00E+00	1.23E+00	0.00E+00	0.00E+00	2.44E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	1.14E-01	0.00E+00	2.19E+00	0.00E+00	0.00E+00	4.37E+00	0.00E+00	0.00E+00

Interpretation

The following dominance analysis show the individual impact categories and explore them in depth.



The environmental impacts were analysed using the example of global warming potential (GWP total) to identify the responsible sources along the life cycle. Modules A1-A3 (43.0%) has dominant influence followed by module C3 (35.0%) and module A5 (18.8%) on GWP total. In modules A1-A3 the extraction of the adhesive and the polyethylene, in module C3, the incineration of the adhesive, and in module A5 the incineration of the polyethylene packaging is the main responsibility.

Transportation of raw materials to and between the manufacturing sites (A2) and disposal transportation of the product in EoL (C2) are not very relevant in terms of GWP. The negative contribution to biogenic GWP in A1-A3 and the positive contribution in A5 can be explained by the use of wooden and cardboard packaging, in which biogenic carbon is bound.

The extraction of the adhesive has the largest contribution to the impacts of the indicators GWP fossil, GWP luluc, ODP, AP, EP, POCP, ADPF and WDP, the steel drum for ADPE.

The data quality of the relevant generic datasets used is classified as very good, good or satisfactory. Relevant data sets are defined as data sets that together account for at least 80% of the absolute impact of each core indicator included in the EPD across the declared modules with the exception of Module D.

The variation of the environmental impact indicator results for modules A to C between the included products and the declared worst-case is up to -27.4%:

Highest variations between the declared worst-case product and the included products

Indicator	Unit	For modules A to C
GWP-fossil	%	-24.3
GWP-biogenic	%	0.0
GWP-luluc	%	-0.3
GWP-total	%	-23.7
ODP	%	0.0
AP	%	-7.9
EP-freshwater	%	-1.9
EP-marine	%	-6.3
EP-terrestrial	%	-9.7
POCP	%	-12.3
ADP-minerals&metals	%	-0.3
ADP-fossil	%	-27.4
WDP	%	-11.2

References

EN 15804:2012+A2:2019, Sustainability of construction works – Environmental product declarations – Core rules for product category of construction products, 2019.

EPD International. General Programme Instructions of the International EPD® System. Version 4.0. 2021.

EPD International. PCR 2019:14 Construction products and construction services, version 1.3.2. 2023.

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

ISO 9001:2015, Quality management systems: Requirements, International Organization for Standardization ISO, 2015.

LCA for Experts 10.7: Software and Database for Life Cycle Engineering and the databases (service pack 2023.2), Sphera Solutions GmbH, Leinfelden-Echterdingen, 2024.

