



Environmental product declaration

in accordance with ISO 14025, based on EN 15804+A2

PetaFresh - seafood packaging in corrugated cardboard + lid, 15 kg





The Norwegian EPD Foundation

Owner of the declaration:

VPK Packaging AS

PetaFresh - seafood packaging in corrugated cardboard + lid, 15 kg

Declared unit:

1 tonne

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core

NPCR 023:2021 Packaging products and services

Program operator:

The Norwegian EPD Foundation

Declaration number:

NEPD-7868-7540-EN

Registration number:

NEPD-7868-7540-EN

Issue date: 21.10.2024

Valid to: 21.10.2029

EPD software:

LCAno EPD generator ID: 440302



General information

Product

PetaFresh - seafood packaging in corrugated cardboard + lid, 15 kg

Program operator:

The Norwegian EPD Foundation
Post Box 5250 Majorstuen, 0303 Oslo, Norway

Phone: +47 977 22 020 web: www.epd-norge.no

Declaration number:

NEPD-7868-7540-EN

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR NPCR 023:2021 Packaging products and services

Statement of liability:

The owner of the declaration shall be liable for the underlying information and evidence. EPD Norway shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

Declared unit:

1 tonne PetaFresh - seafood packaging in corrugated cardboard + lid, 15 kg

Declared unit with option:

A1-A3,A4,B1,B2,C1,C2,C3,C4,D

Functional unit:

A delivery of 1000 kg of product in boxes and lid with a capacity of 15 kg. For that purpose, 66.7 units are needed.

General information on verification of EPD from EPD tools:

Independent verification of data, other environmental information and the declaration according to ISO 14025:2010, § 8.1.3 and § 8.1.4. Verification of each EPD is made according to EPD-Norway's guidelines for verification and approval requiring that tools are i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPD-Norway, and iii) the process is reviewed annually by an independent third party verifier. See Appendix G of EPD-Norway's General Programme Instructions for further information on EPD tools

Verification of EPD tool:

Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPDNorway's procedures and guidelines for verification and approval of EPD tools.

Third party verifier:

Gaylord K. Booto, Norwegian Institute for Air Research (NILU)

(no signature required)

Owner of the declaration:

VPK Packaging AS Contact person: Mari Haugesten Phone: +47 95 301 808 e-mail: Mari.Haugesten@vpkgroup.com

Manufacturer:

VPK Packaging AS

Place of production:

VPK Packaging AS Svinesundparken 14 1788 Halden, Norway

Management system:

Organisation no:

917274975

Issue date:

21.10.2024

Valid to:

21.10.2029

Year of study:

2022

Comparability:

EPD of construction products may not be comparable if they do not comply with EN 15804 and seen in a life cycle contest

Development and verification of EPD:

The declaration is created using EPD tool lca.tools ver EPD2022.03, developed by LCA.no. The EPD tool is integrated in the company's management system, and has been approved by EPD Norway.

Developer of EPD: Pedro Ferreira

Reviewer of company-specific input data and EPD: Børge Heggen Johansen, Energiråd AS

Approved:

Håkon Hauan Managing Director of EPD-Norway



Product

Product description:

PetaFresh is delivered flat and takes up little space. The construction together with a thin layer of PET and PE means that PetaFresh retains its properties even in a humid environment. PetaFresh can be recycled like normal corrugated cardboard. The solution is designed for dry cooling elements such as dry ice. PetaFresh is available both as a manual self-locking solution and a mechanical solution.

Product specification

Box external dimensions L600 x W400 x H140 Box internal dimensions L558 x W368 x H146 Lid dimensions L600 x W400 x H140 Internal net volume L583 x W378 x H146

External volume: 33,600 cm³ Weight of box with lid: 0.766 kg

Materials	kg	%		
Additives	0,78	1,53		
Cardboard	34,18	66,87		
Paper	16,15	31,60		
Total	51,12	100,00		
Packaging	kg	%		
Packaging - Cardboard	0,18	6,52		
Packaging - Pallet	2,57	92,93		
		0,55		
Packaging - Plastic straps	0,02	0,55		

Technical data:

Advantages of seafood packaging in corrugated cardboard:

- recvclable
- space-saving
- more product per pallet
- easy to travel

Market:

Norway is the market for fish packaging.

Reference service life, product

1 delivery.

Reference service life, number of loops for reusable packaging

Not relevant

LCA: Calculation rules

Declared unit:

1 tonne PetaFresh - seafood packaging in corrugated cardboard + lid, 15 kg

Cut-off criteria:

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not apply for hazardous materials and substances.

Allocation:

The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

Data quality:

Specific data for the product composition are provided by the manufacturer. The data represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on EPDs according to EN 15804 and different LCA databases. The data quality of the raw materials in A1 is presented in the table below.



Materials	Source	Data quality	Year
Additives	ecoinvent 3.6	Database	2019
Cardboard	ecoinvent 3.6	Database	2019
Cardboard	Modified ecoinvent 3.6	Database	2019
Packaging - Cardboard	Modified ecoinvent 3.6	Database	2019
Packaging - Pallet	Modified ecoinvent 3.6	Database	2019
Packaging - Plastic straps	ecoinvent 3.6	Database	2019
Paper	ecoinvent 3.6	Database	2019

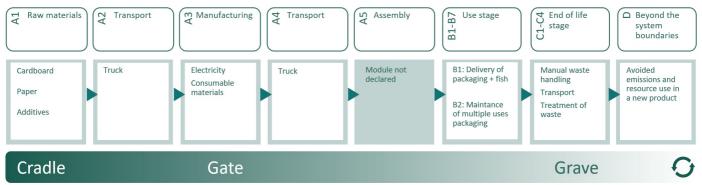


System boundaries (X=included, MND=module not declared, MNR=module not relevant)

	Pi	roduct stag	je		uction ion stage				Use stage					End of life stage			Beyond the system boundaries
Raw	materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De- construction demolition	Transport	Waste	Disposal	Reuse-Recovery- Recycling-potential
A	41	A2	A3	A4	A5	B1	B2	В3	B4	B5	В6	В7	C1	C2	C3	C4	D
	Χ	Χ	X	X	MND	X	X	MND	MND	MNR	MND	MND	X	X	X	X	X

System boundary:

The included modules are A1-A3, A4, B1-B2, C1-C4 and D, in accordance with NPCR 023 for packaging products and services. The fish products are then packed and transported in module B1. Module B2 is declared as zero, as the product is for single use.



Additional technical information:



LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

Module B1 contains an average distance for air transport of the packed fish products to the North American and Asian markets. A distance of 317.4 km for in-land transportation is added.

Modules C and D uses the Norwegian (SSB 2023) statistics for cardboard and paper waste treatment, with 98% of the total packaging weight going to recycling (module C3) and 2% going to landfill (module C4). Module C1 is declared as zero, as handling of cardboard waste is often done by manual labor. Use of portable electrical devices (e.g., drill) usually have low energy requirements, falling under the cut-off criterion of 1%.

Transport from production place to user (A4)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, 16-32 tonnes, EURO 6 (km)	36,7 %	660	0,043	l/tkm	28,38
Use (B1)	Unit	Value			
Aircraft, dedicated freight, long haul (>4000km) (km)	kgkm/DU	6676,25			
Truck, 16-32 tonnes, EURO 6 (km)	kgkm/DU	317,50			
De-construction demolition (C1)	Unit	Value			
Manual handling per kg of cardboard waste (kg)	kg/DU	51,12			
Transport to waste processing (C2)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, 16-32 tonnes, EURO 6 (km)	36,7 %	85	0,043	l/tkm	3,66
Waste processing (C3)	Unit	Value			
Corrugated cardboard to recycling (kg)	kg/DU	50,09			
Disposal (C4)	Unit	Value			
Waste, cardboard, to landfill (kg)	kg/DU	1,02			
Benefits and loads beyond the system boundaries (D)	Unit	Value			
Substitution for cardboard (kg)	kg/DU	50,09			



LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

Envir	Environmental impact												
	Indicator	Unit	A1-A3	A4	B1	B2	C1	C2	C3	C4	D		
	GWP-total	kg CO ₂ -eq	8,21E+00	1,08E+02	2,35E+00	0	0,00E+00	1,39E+01	5,71E+01	1,59E+00	2,73E+01		
	GWP-fossil	kg CO ₂ -eq	6,40E+01	1,08E+02	2,35E+00	0	0,00E+00	1,39E+01	0,00E+00	1,20E-02	-5,86E+01		
	GWP-biogenic	kg CO ₂ -eq	-5,61E+01	4,46E-02	3,09E-04	0	0,00E+00	5,75E-03	5,71E+01	1,58E+00	8,61E+01		
	GWP-luluc	kg CO ₂ -eq	3,19E-01	3,84E-02	1,39E-04	0	0,00E+00	4,94E-03	0,00E+00	5,76E-06	-1,32E-01		
(3)	ODP	kg CFC11 -eq	7,22E-06	2,44E-05	5,32E-07	0	0,00E+00	3,15E-06	0,00E+00	3,50E-09	-8,07E-06		
Œ.	AP	mol H+ -eq	3,80E-01	3,10E-01	1,20E-02	0	0,00E+00	3,99E-02	0,00E+00	1,77E-04	-3,27E-01		
-	EP-FreshWater	kg P -eq	4,52E-03	8,61E-04	4,19E-06	0	0,00E+00	1,11E-04	0,00E+00	8,81E-07	-4,03E-03		
-	EP-Marine	kg N -eq	1,01E-01	6,13E-02	4,32E-03	0	0,00E+00	7,90E-03	0,00E+00	2,06E-03	-7,76E-02		
4	EP-Terrestial	mol N -eq	1,05E+00	6,86E-01	4,74E-02	0	0,00E+00	8,83E-02	0,00E+00	4,61E-04	-8,62E-01		
	POCP	kg NMVOC -eq	2,90E-01	2,63E-01	1,23E-02	0	0,00E+00	3,38E-02	0,00E+00	5,54E-04	-2,28E-01		
	ADP-minerals&metals ¹	kg Sb-eq	9,61E-04	2,98E-03	2,92E-06	0	0,00E+00	3,84E-04	0,00E+00	1,08E-07	-7,70E-04		
	ADP-fossil ¹	MJ	1,05E+03	1,63E+03	3,31E+01	0	0,00E+00	2,10E+02	0,00E+00	3,02E-01	-9,99E+02		
<u>%</u>	WDP ¹	m ³	5,23E+03	1,58E+03	6,16E+00	0	0,00E+00	2,03E+02	0,00E+00	1,09E+01	-7,41E+03		

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 = 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

Remarks to environmental impacts

[&]quot;Reading example: 9,0 E-03 = 9,0*10-3 = 0,009"

^{*}INA Indicator Not Assessed

^{1.} The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator



Additio	Additional environmental impact indicators											
Inc	dicator	Unit	A1-A3	A4	B1	B2	C1	C2	C3	C4	D	
	PM Disease incidence		9,73E-06	6,60E-06	2,32E-08	0	0,00E+00	8,50E-07	0,00E+00	1,78E-09	-5,87E-06	
	IRP ²	kgBq U235 -eq	3,56E+00	7,12E+00	1,45E-01	0	0,00E+00	9,18E-01	0,00E+00	2,43E-03	-4,83E+00	
	ETP-fw ¹	CTUe	4,63E+03	1,21E+03	1,61E+01	0	0,00E+00	1,56E+02	0,00E+00	4,82E+00	-1,95E+03	
46.* ****	HTP-c ¹	CTUh	4,94E-08	0,00E+00	0,00E+00	0	0,00E+00	0,00E+00	0,00E+00	1,80E-11	-4,50E-08	
48 <u>D</u>	HTP-nc ¹	CTUh	9,66E-07	1,32E-06	2,73E-08	0	0,00E+00	1,70E-07	0,00E+00	5,97E-10	-6,58E-07	
	SQP ¹	dimensionless	9,75E+03	1,14E+03	4,55E+00	0	0,00E+00	1,47E+02	0,00E+00	9,04E-01	-1,15E+04	

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 = Potential Soil Quality Index (dimensionless)

[&]quot;Reading example: 9,0 E-03 = 9,0*10-3 = 0,009"

^{*}INA Indicator Not Assessed

^{1.} The results of this environmental impact 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 us	e										
	dicator	Unit	A1-A3	A4	B1	B2	C1	C2	C3	C4	D
Ç.C	PERE	MJ	1,20E+03	2,33E+01	1,09E-01	0	0,00E+00	3,01E+00	0,00E+00	5,23E-02	-1,39E+03
4	PERM	MJ	7,14E+02	0,00E+00	0,00E+00	0	0,00E+00	0,00E+00	-7,14E+02	0,00E+00	-7,07E+02
্ৰ কু	PERT	MJ	1,91E+03	2,33E+01	1,09E-01	0	0,00E+00	3,01E+00	-7,14E+02	5,23E-02	-2,09E+03
	PENRE	MJ	9,36E+02	1,63E+03	3,31E+01	0	0,00E+00	2,10E+02	0,00E+00	3,02E-01	-1,00E+03
Å	PENRM	MJ	1,36E+02	0,00E+00	0,00E+00	0	0,00E+00	0,00E+00	-1,36E+02	0,00E+00	0,00E+00
IA	PENRT	MJ	1,07E+03	1,63E+03	3,31E+01	0	0,00E+00	2,10E+02	-1,36E+02	3,02E-01	-1,00E+03
	SM	kg	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
2	RSF	MJ	4,19E+00	8,35E-01	2,63E-03	0	0,00E+00	1,08E-01	0,00E+00	1,08E-03	-6,87E+00
凾	NRSF	MJ	6,25E-01	2,98E+00	8,43E-03	0	0,00E+00	3,84E-01	0,00E+00	2,99E-04	-1,16E+00
8	FW	m^3	2,10E+00	1,74E-01	9,63E-04	0	0,00E+00	2,25E-02	0,00E+00	4,32E-04	-2,80E+00

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 resources used as raw materials; PENRM = Use of non renewable primary energy resources; SM = Use of secondary materials; PENRM = Use of renewable primary energy resources; SM = Use of secondary materials; RSF = Use of renewable secondary fuels; RSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

[&]quot;Reading example: 9,0 E-03 = 9,0*10-3 = 0,009" *INA Indicator Not Assessed



End of life -	End of life - Waste												
Indicator		Unit	A1-A3	A4	B1	B2	C1	C2	C3	C4	D		
ā	HWD	kg	3,98E-01	8,41E-02	8,93E-04	0	0,00E+00	1,08E-02	0,00E+00	0,00E+00	-1,63E-01		
Ū	NHWD	kg	1,14E+01	7,93E+01	5,39E-02	0	0,00E+00	1,02E+01	0,00E+00	1,02E+00	-9,04E+00		
8	RWD	kg	3,55E-03	1,11E-02	2,37E-04	0	0,00E+00	1,43E-03	0,00E+00	0,00E+00	-4,44E-03		

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

"Reading example: 9,0 E-03 = 9,0*10-3 = 0,009" *INA Indicator Not Assessed

Er	End of life - Output flow												
	Indica	tor	Unit	A1-A3	A4	B1	B2	C1	C2	C3	C4	D	
	@ D	CRU	kg	0,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
	\$\	MFR	kg	3,00E+00	0,00E+00	0,00E+00	0	0,00E+00	0,00E+00	5,01E+01	0,00E+00	0,00E+00	
	DF	MER	kg	4,68E-01	0,00E+00	0,00E+00	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
	50	EEE	MJ	3,83E-01	0,00E+00	0,00E+00	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
	DØ.	EET	MJ	5,79E+00	0,00E+00	0,00E+00	0	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy electrical; EET = Exported energy thermal

"Reading example: 9,0 E-03 = 9,0*10-3 = 0,009" *INA Indicator Not Assessed

Biogenic Carbon Content										
Jnit At the factory gate										
rg C 1,56E+01										
rg C 0,00E+00										
k										

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO2



Additional requirements

Greenhouse gas emissions from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

Electricity mix	Source	Amount	Unit
Electricity, Norway (kWh)	ecoinvent 3.6	21,18	g CO2-eq/kWh

Dangerous substances

The product contains no substances given by the REACH Candidate list.

Indoor environment

Additional Environmental Information

Additional environmental impact indicators required in NPCR Part A for construction products											
Indicator Unit A1-A3 A4 B1 B2 C1 C2 C3 C4 D											
GWPIOBC	kg CO ₂ -eq	6,53E+01	1,08E+02	5,52E+00	0	0,00E+00	1,39E+01	0,00E+00	1,59E+00	-5,93E+01	

GWP-IOBC: Global warming potential calculated according to the principle of instantaneous oxidation. In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.



Bibliography

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NPCR 023Part B for Packaging products and services, Ver. 1.1, 20.12.2021, EPD Norway.

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