Environmental Product Profile

In accordance with ISO 14021:2006 and ISO 14040:2006 for:

QRILL Meal

From:

Aker QRILL Company

Publication date of the study:	2025-09.09
Study validity:	5 years from publication

General information

Accountabilities for PCR, LCA, and independent, third-party verification

Product Category Rules (PCR)

PCR: *Preparation used in animal feeding for food-producing animals, PCR 2016:03, V.2.0, UN CPC 233.* 2021-09-10

PCR review was conducted by *the Technical Committee of the International EPD® System. A full list of members is available on www.environdec.com. The review panel may be contacted via info@environdec.com.*

Life Cycle Assessment (LCA)

LCA accountability: *LCA Dynamics, Riga, Latvia*

Third-party verification

Independent third-party verification of the declaration and data:

☒ EPP verification by an individual verifier

Third-party verifier: *Elisabet Amat, eamat@greenize.es*

Approved verifier for: The International EPD® System, EPD Norway, EPDHub, and Kiwa Ecobility Experts

The procedure for follow-up of data during EPP validity involves a third-party verifier:

☐ Yes ☒ No

Note:

- *The EPP owner has sole ownership, liability, and responsibility for the information reported.*
- *The LCA has been performed in compliance with ISO 14040:2006 and ISO 14021:2006 (Environmental labels and declarations - Type I- self-declared environmental claims).*
- *For different studies 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.*

Company information

Owner of the EPP: **Aker QRILL Company**

Contact: **Ragnhild Dragøy | ragnhild.dragoy@qrill.com**

Name and location of production site: **F/V Antarctic Endurance, F/V Antarctic Sea, and F/T Saga Sea are Norwegian-registered factory trawlers operating in the South Atlantic-/Antarctic Ocean. The product is then stored in Montevideo (Uruguay).**

Description of the organisation

Aker QRILL Company is a biotech innovator and Antarctic krill harvesting company, founded based on the company's strong belief in the positive health effects of krill. Aker QRILL Company was spun out of Aker BioMarine in 2024 and continues to develop the business and take care of the ecosystem where krill is harvested. Aker QRILL Company has a fully integrated value chain stretching from sustainable krill harvesting in pristine Antarctic waters through production and logistics to customers around the world. The company develops krill-based ingredients for animal feed applications for aquaculture and pet food. Aker QRILL Company strongly focuses on sustainability, both in the harvesting segment, in the processing and total utilization of our krill, and in the logistics segment. Aker QRILL Company has, in this EPP, stated the environmental footprint of the main volume product, the Qrill meal, which is produced on board the licensed fishing vessels.

Aker QRILL Company has, since the start of its operation, had a strict focus on sustainable fishing and the protection of the ecosystems in which we operate. This is reflected in the Marine Stewardship Council certifications and the Friends of the Sea certification. In addition, the krill fisheries have been rated the most sustainable fishery with an A rating by the Sustainable Fisheries Partnership (FSP) and have demonstrated stable, low bycatch with very reliable reporting of all catches over the last decades (Krafft et al., 2022). Since 2020, Aker QRILL Company has set goals to be sustainable in all aspects of the business. Aker QRILL Company will remain certified for sustainable fishing, reduce the CO_2 and environmental footprint of our operations, and continue to innovate in products and processes that improve production and products.

Product information

Product name: **QRILL meal as of specifications. Marketed as Nutra Meal, QRILL™ Antarctic Krill Meal, and QRILL™ Pet.**

Product identification

QRILL meal is sold under several item codes depending on the size of the bag and the content of fat. The fat varies over the season, and consequently, so does the meal's overall nutritional composition. Thus, the products are sold with different names based on seasonality. The item codes are as follows: 43011300 (500 kg), 43010300 (25kg), 43010600 (protein boost 25 kg), 43011600 (protein boost 500 kg), 43011301 (450 kg).

Product description

Dry orange-brownish whole meal from krill. For use in aqua animal nutrition in formulated diets. The product contains phospholipid-bound omega-3 fatty acids, high-quality marine protein, choline, and astaxanthin.

Shelf life is retested at 2 years from the date of manufacturing when stored in original, unopened, and sealed containers at recommended storage conditions.

UN CPC code: **UN CPC 233**

Geographical scope: **Upstream and core: *Uruguay***
Downstream: *Global*

LCA information

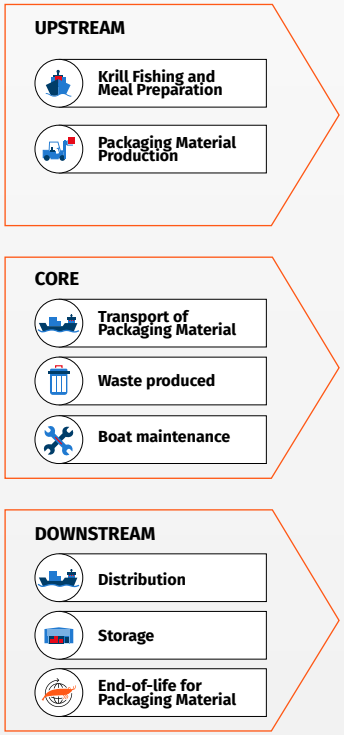
Declared unit: 1 kg of the product and the required packaging (0.0068 kg for big bags case and 0.0015 kg for small bags)

Reference service life: Not applicable

Time representativeness: 2024

Database(s) and LCA software used: Ecoinvent 3.10 on SimaPro 10.1 software

System diagram:



Description of system boundaries

The LCA is made in the cradle-to-grave form.

The **upstream** processes include:

1. Krill fishing. This includes mainly the use of fishing vessels and their diesel consumption. The product consists only of raw krill, and no other ingredients are added.
2. Packaging material production. There are 2 possibilities of packaging materials: big bags (500 kg) with an inner part of PE and an outer part of PP. Small bags (25 kg) made only of PE.

The **core** processes include:

1. The transportation of the packaging bags to the vessels where the product is directly packaged.
2. The maintenance of the boat. These include the replacement of damaged steel parts.
3. The waste treatment of the waste produced during the feed preparation. They are mainly related to the packaging of the waste materials and ashes from fishing vessel engines.

Since the preparation of the final product and its packaging procedures are made directly on the fishing vessels, and the disaggregation of the diesel consumption needed for this operation is not possible, they are allocated to the krill fishing.

The **downstream** processes include:

1. The transportation of the packaged product to the storage site. And an average final delivery scenario as stated in PCR 2016:03.
2. The storage before the final distribution.
3. End-of-life of the packaging materials.

Excluded lifecycle stages

No lifecycle stages are excluded from this study.

More information:

Heat, electricity, and other energy use and waste in production are calculated as an average weight per produced kg of QRILL meal yearly production data and the rate for 2024. Manufacturing processes consider the specific country's mix of heat and electricity and can be considered primary data. Secondary data on materials' flow information has been gathered from the Ecoinvent 3.10 database. In total, the share of primary data used contributes to 72% of the total GWP indicator.

In addition, the mass allocation is made following mass allocation and is stated in the PCR: Preparation used in animal feeding for food-producing animals, PCR 2016:03, V.2.0, UN CPC 233. With waste production in-house, incoming energy and water are allocated to the QRILL meal based on its production data. The recycling process and transportation of the material are earmarked for this analysis. The polluter-pays principle has been followed. Moreover, the processes excluded are environmental impacts from infrastructure, construction, production equipment, and tools that are not directly consumed in the production process, and personnel-related impacts, such as transportation to and from the work site.

Scenarios of the downstream stage

Distribution scenario

For the distribution scenario, the average scenario reported in the PCR 2016:03 was assumed. The details are reported in the table below.

Parameter	Value/description
Fuel type and consumption of the vehicle or vehicle type used for transport, e.g., long-distance truck, commercial vehicle, etc.	Average freight lorry EURO4 with capacities varying from 16 to 32 metric tons, depending on the material transported.
Distance	1000km average distance (PCR 2016:03)
Capacity utilization (including empty returns)	5.79 tons, as reported in the Ecoinvent 3.10 database
Volume capacity utilization factor	0.8 (average)

End-of-life scenario for packaging materials

A portion of the packaging materials (8%) was reported to be recycled, based on data from the AION report.

For the remaining 92%, the average end-of-life treatment scenarios from Ecoinvent 3.10, aligned with EN 15804, were applied. These scenarios are detailed below.

Disposal method	Polyethylene bags	Polypropylene bags
Incineration	11%	12%
Open burning	10%	10%
Open dump	30%	29%
Landfill	49%	49%

Content declaration

Product

Product components	kg	%	Biogenic carbon con-tent (%)	Biogenic carbon con-tent (kg)
Raw krill*	1	100	50	0.5
TOTAL	1	100	50	0.5

**Dry weight*

Packaging

Distribution packaging and final consumer packaging are the same for the QRILL Meal product. There are 2 possibilities, based on the quantity of product stocked. Big bags for 500 kg; they consist of an inner part of PE and an outer part of PP. Small bags for 25 kg consist only of a PE bag. The shares are around 23% and 77% respectively.

Recycled material

Provenience of recycled materials (pre-consumer or post-consumer) in the product:
The product and its packaging do not contain any recycled materials .

Results of the environmental performance indicators

The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins, and/or risks.

Impact category indicators

PARAMETER		UNIT	Upstream	Core	Downstream	TOTAL
Global warming potential (GWP)	Fossil	kg CO_2 eq.	1.80E+00	1.72E-01	3.34E-01	2.31E+00
	Biogenic	kg CO_2 eq.	-1.76E+00	4.83E-05	1.76E+00	4.82E-04
	Land use and land transformation	kg CO_2 eq.	9.43E-05	5.73E-06	3.82E-05	1.38E-04
	TOTAL	kg CO_2 eq.	4.31E-02	1.73E-01	2.09E+00	2.31E+00
Ozone layer depletion (ODP)		kg CFC 11 eq.	2.83E-08	2.68E-09	4.95E-09	3.59E-08
Acidification potential (AP)		mol H^+ eq.	5.62E-02	5.51E-03	6.12E-03	6.78E-02
Eutrophication potential (EP)	Aquatic freshwater	kg P eq.	3.28E-06	1.71E-07	5.33E-07	3.98E-06
	Aquatic marine	kg N eq.	1.37E-02	1.35E-03	1.59E-03	1.66E-02
	Aquatic terrestrial	mol N eq.	1.50E-01	1.47E-02	1.74E-02	1.82E-01
Photochemical oxidant creation potential (POCP)		kg NMVOC eq.	4.11E-02	4.02E-03	4.89E-03	5.00E-02
Abiotic depletion potential (ADP)*	Metals and minerals	kg Sb eq.	4.36E-07	1.19E-08	1.50E-08	4.63E-07
	Fossil resources	MJ	2.39E+01	2.24E+00	4.33E+00	3.05E+01
Water deprivation potential (WDP)		m^3 world eq. deprived	4.79E-02	2.84E-03	4.79E-03	5.56E-02

** 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*

Resource use indicators

PARAMETER		UNIT	Upstream	Core	Downstream	TOTAL
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	1.31E-01	5.41E-03	1.49E-01	2.85E-01
	Used as raw materials	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	TOTAL	MJ, net calorific value	1.31E-01	5.41E-03	1.49E-01	2.85E-01
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	2.39E+01	1.94E+00	4.64E+00	3.05E+01
	Used as raw materials	MJ, net calorific value	0.00E+00	3.04E-01	-3.04E-01	0.00E+00
	TOTAL	MJ, net calorific value	2.39E+01	2.24E+00	4.33E+00	3.05E+01
Net use of fresh water		m^3	1.19E-03	6.91E-05	1.72E-04	1.43E-03

Waste indicators (optional)

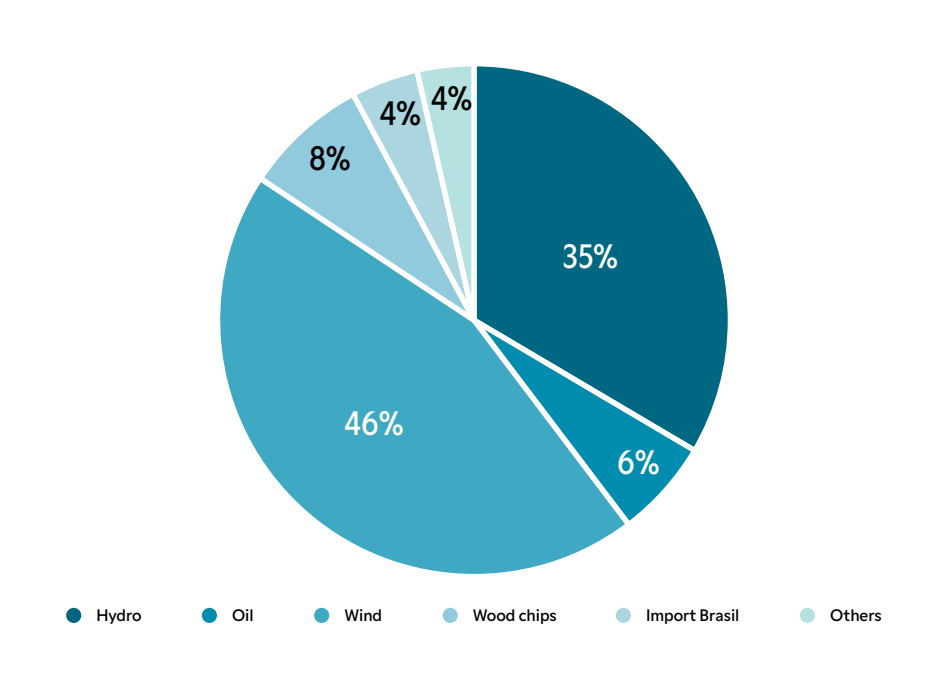
PARAMETER	UNIT	Upstream	Core	Downstream	TOTAL
Hazardous waste disposed	kg	2.10E-02	5.43E-04	8.69E-04	2.24E-02
Non-hazardous waste disposed	kg	2.87E-01	1.16E-02	3.48E-02	3.33E-01
Radioactive waste disposed	kg	2.03E-06	1.12E-07	1.75E-07	2.32E-06

Output flow indicators (optional)

PARAMETER	UNIT	Upstream	Core	Downstream	TOTAL
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	5.19E-04	5.19E-04
Materials for energy recovery	kg	0.00E+00	4.18E-07	1.12E-03	1.12E-03
Exported energy, electricity	MJ per energy carrier	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ per energy carrier	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Additional environmental information

The energy sources behind the electricity grid in the downstream processes present on Ecoinvent 3.10 *(Electricity, medium voltage {UY}| market for | Cut-off, U)* are shown below. The total GWP a ssociated with 1 kWh of the selected electricity is equal to 0.085 kgCO_2 eq.



Since electricity is also generated in the upstream and core stages using a diesel engine, the corresponding emission factor has been reported. The emission factor is: 0.093 kg CO_2 eq./MJ.

Additional social and economic information

Sustainability, transparency, and responsibility are characteristics of Aker QRILL Company's governance and way of operating. This is what ensures long-term profitability and what provides Aker QRILL Company the license to operate. In addition to significant efforts to reduce the environmental footprint, Aker QRILL Company is adhering to required reporting, including the Transparency Act of Norway, ensuring transparency in our own production of goods as well as our suppliers and business partners, with a focus on the respect of fundamental human rights and decent working conditions. Aker QRILL Company has also implemented the EU taxonomy to report on eligibility and alignment with the taxonomy requirement.

AQC also works closely with financial partners, setting up sustainability-linked KPIs for financial reporting. Aker QRILL Company has set clear and measurable ESG targets for 2030 and 2050 and works in close collaboration with stakeholders to ensure the well-being of people, communities, and nature wherever Aker QRILL Company operates. The basis for sustainability in Aker QRILL Company is the precautionary harvesting of the raw material Antarctic krill, one of the world's biggest and most unique marine biomasses, scientifically managed and monitored.

Aker QRILL Company is committed to delivering krill products that support nutritious and sustainable diets, and has set ambitions to significantly reduce CO_2-emission intensity by 2035 with a goal of 50% reduction on meal produced in 2020. In the efforts towards reaching the ESG targets, benchmarking is conducted internally while embracing transparency and external scrutiny of the progress made. Aker QRILL Company is part of the solution to provide ingredients that can be part of feeding a growing population in a sustainable way. The company continuously innovates, both in our harvesting and production methods as well as in ensuring maximum utilization and value of our resources while causing a minimal footprint.

Version history

Original Version of the EPD, 2023-05-31

Revision 1, 2025-09-09

Differences versus the previously published version:

- Use of the latest company-specific data from 2024 to better reflect current operations.
- Inclusion of biogenic carbon from krill, now considered in line with evolving sector practices.
- Updated information on plastic packaging recycling, based on newly available data from the AION report.
- Waste from the production phase is now accounted for, offering a more complete environmental picture.
- As no new distribution data was provided, the recommended default scenario from the PCR 2016:03 has been applied.
- Product storage has been reallocated to the downstream phase, following PCR 2016:03 guidance to improve alignment with current methodologies.

References

- AION report. *"Big bags sent to recycling 2024"*
- Ecoinvent, 2025. The ecoinvent® v3.10 database. The Swiss Centre for Life Cycle Inventories, Dübendorf (CH). https://ecoinvent.org/the-ecoinvent-database/
- ISO 14021:2006, Environmental labels and declarations – Self-declared environmental claims (Type II Environmental labelling).
- ISO 14025:2006. Environmental labels and declaration – Type III environmental declaration - Principles and procedures
- ISO 14040:2006. Environmental management – Life cycle assessment – Principles and framework
- ISO 14044:2006. Environmental management – Life cycle assessment – Requirements and guidelines
- Krafft B., et al. (2022). Bycatch in the Antarctic krill (Euphausia superba) trawl fishery. Fisheries Management and Ecology, 00, 1– 7. https://doi.org/10.1111/fme.12607
- LCA background report for Qrill meal, Aker QRILL Company, September 2025.
- LCA software SimaPro 10.1
- PCR 2016:03. Preparation used in animal feeding for food-producing animals. V.2.0, UN CPC 233. 2021-09-10

VERIFICATION STATEMENT

VS-2025EPD

The verifier hereby confirms that, following the checks performed, in accordance with the limits of the scope of our appointment, nothing has come to the verifier's attention to suggest any data errors or deviations from the requirements by the below-referenced EPP (Environmental Product Profile) and related project reports, in terms of

- the underlying data collected and used for the LCA calculations,
- the way the LCA-based calculations has been carried out to comply with the calculation rules,
- the presentation of environmental performance included in the EPP, and
- any other information included in the declaration

with respect to the procedural and methodological requirements in ISO 14040:2006, ISO 14044:2006, ISO 14021:2006.

The verifier also confirms that, in accordance with the limits of the scope of our appointment, the company-specific data has been examined as regards plausibility and consistency. The declaration owner is responsible for its factual integrity and that the product does not violate relevant legislation.

Name of EPP:	Qrill meal
Product(s):	Animal feed products
Programme	Self-declaration. Not for registration.
LCA report: *Name, number, author, filed at*	LIFE CYCLE ASSESSMENT PROJECT REPORT OF QRILL MEAL Prepared for Aker QRILL Company, Riga, August 2025, Version 1.0
LCA accountability	Dr.sc.ing. Francesco Romagnoli Email: francesco.romagnoli@lcadynamics.com Riga, Latvia. www.lcadynamics.com
Owner of declaration (s):	Aker QRILL Company
PCR: *Name, version and registration number*	Preparation used in animal feeding for food-producing animals, PCR 2016:03, V.2.0, UN CPC 233. 2021-09-10
Version history	Original Version of the EPD/EPP, 2023-05-31 Revision 1, 2025-09-09

Verifier:

Date, September 09, 2025.
Elisabet Amat

I confirm that I have sufficient knowledge and experience of the product category, the industry, relevant standards and the geographical area of the Environmental Product Profile to carry out this verification.

I confirm that I have been independent in my role as verifier I have not been involved in the execution of the LCA or in the development of the declaration, and have no conflicts of interest regarding this verification.

Elisabet Amat Guasch
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Enkarterri 2, floor 3, office 4. 48840 GÜEÑES
(SPAIN)
+34 696736468

EXPLANATIONS TO THE VERIFICATION STATEMENT

BRIEF DESCRIPTION OF THE VERIFICATION PROCESS

Aker QRILL Company has voluntarily entrusted Elisabet Amat / GREENIZE (individual verifier) to carry out an independent (third party) verification of the Life Cycle Assessment project and EPP, prepared by Francesco Romagnoli, LCA Dynamics.

- Date of Verification start: 2025.08.18
- Publication date: 2025.09.09
- Valid to: 2030.09.09

The verifier can proof more than 15 years of experience as LCA consultant and EPD verifier approved by the International EPD System and Norge EPD, also as critical peer reviewer of studies based on ISO 14040:2006 and ISO 14044: 2006 standards.

The role and responsibility of the verifier was to independently verify compliance between calculation rules in the reference standards and the way the LCA-based calculation has been carried out, the quality and accuracy of environmental performance presentation in the EPP/LCA documentation and the adequacy of the EPP reported in accordance with the requirements of referred standards.

The discussions and agreements between EPP owner, LCA practitioner and LCA/EPP verifier during the verification process can be checked in the Communication document (annex). An audit meeting was also carried out to discuss and clarify all doubts and non-conformities.

CALCULATION BASIS

- Database: Ecoinvent 3.10
- Software: Simapro 10.1, selected method EN15804+A2

SCOPE OF APPLICATION

Product name:

Qrill meal as of specifications. Marketed as Nutra Meal, QRILLTM Antarctic Krill Meal, and QRILLTM pet.

The products are sold with different names based on seasonality. The item codes are as follows: 43011300 (500 kg), 43010300 (25kg), 43010600 (protein boost 25 kg), 43011600 (protein boost 500 kg), 43011301 (450 kg).

Name and location of production site:

F/V Antarctic Endurance, F/V Antarctic Sea, and F/T Saga Sea are Norwegian-registered factory trawlers operating in the South Atlantic-/Antarctic Ocean. The product is then stored in Montevideo (Uruguay).

Time representativeness:

2024

CARBON FOOTPRINT

1 kg of the product and the required packaging.

Global warming potential (GWP)	UNIT	Upstream	Core	Downstream	TOTAL
GWP-TOTAL	kg CO2 eq.	4.31E-02	1.73E-01	2.09E+00	2.31E+00

INTENDED USERS OF THIS VERIFICATION STATEMENT

- Internal management
- Externals requests

STANDARD FOR THE VERIFICATION

- ISO 14040:2006, Environmental management — Life cycle assessment — Principles and framework.
- ISO 14044:2006, Environmental management — Life cycle assessment — Requirements and guidelines.
- ISO 14021:2006, Environmental labels and declarations — Self-declared environmental claims (Type II environmental labelling)
- PCR 2016:03 *Preparation used in animal feeding for food-producing animals*, V.2.0, UN CPC 233. 2021-09-10.

AGREED LEVEL OF ASSURANCE

The review of the data and calculations was carried out according to the criteria of relevance, completeness, accuracy, transparency of information and coherence. In this sense, the in-depth verification has been carried out as follows:

- Assurance level (3rd party): reasonable assurance

VERSION HISTORY

Original Version of the EPD/EPP, 2023-05-31

Revision 1, 2025-09-09. Differences versus the previously published version:

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Aker
QRILL
Company

Environmental Product Profile 2025