Environmental Product Declaration

SILVATEAM

**Programme**
The International EPD System
www.environdec.com

**Programme Operator**
EPD International AB

**Registration n.**
S-P-07365

**Registration date**
2024-02-20

**Valid until**
2029-02-19

Environmental Product Declaration in accordance with ISO 14025:2006

# SILVAFEED Q

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

EPD® ENVIRONMENTAL PRODUCT DECLARATION

Argentina EPD

# Programme information

## EPD REFERENCES

**EPD Owner**: INDUNOR S.A. . The EPD owner has the sole ownership, liability and responsibility of the EPD

**Program Operator**: EPD INTERNATIONAL AB, Box 21060, SE-100 31 Stockholm, Sweden - info@environdec.com

## INDEPENDENT VERIFICATION

EPDs within the same product category but from different programmes 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 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. The EPD owner has the sole ownership, liability, and responsibility for the EPD

**Product category rules (PCR)**: Preparations used in animal feeding for food-producing animals, 2016:03, Version 2.0, UN CPC 233

**PCR review was conducted by:** Filippo Sessa

**Independent third-party verification** of the declaration and data, according to ISO 14025:2006:

☐ EPD process certification ☑ EPD verification ☐ Pre-verified tool

**Verifier:** Dr. Ing. Javier Martin ECHAZARRETA
Instituto Nacional De Tecnología Industrial, Subgerencia Operativa de Ejecución de Programas

**Approved by:** The International EPD® System

The procedure for follow-up during EPD validity, as defined in the GPI, involves **third-party verifier:** ☑ Yes ☐ No

## CONTACTS

To get more information about this environmental declaration or about **SILVATEAM** activities please contact:

Jorgelina Alegre: jalegre@silvateam.com;
Celina Adriana Molfino: cmolfino@silvateam.com

Technical support to Silvateam was provided by:
**Life Cycle Engineering S.p.A.**
Via Livorno 60 - Turin - Italy
www.lcengineering.eu

# The Company

Silvateam sells its branded products in more than 60 countries; it is a world leader in the production, commercialization, and sale of plant-based extracts, tannins and their derivatives.

Silvateam researches, manufactures and develops products used for high quality tanned leather, enology, animal feed and other industrial applications, for example, chemicals, oil drilling, textiles, and mining. In 2001, the company successfully entered the food ingredients market, first with the production of Tara gum, and later with pectin and tailor-made stabilizers blends.

Backed by the experience gained throughout its 160 years of history, Silvateam faces future challenges by being committed to continuous improvement and focusing on quality and innovation. This offers its customers a high-quality service, accompanied by products always matching market expectations.

From the beginning, the company was concerned about environmental conservation as part of its correct use of natural resources and the execution of certain sustainable development policies. Out of respect for the environment and a desire to make efficient use of resources, Silvateam is committed to energy saving processes and a better use of raw materials.

Silvateam promotes the social and economic growth of its employees and of the local communities.

## The Silvateam Group

Silvateam includes six companies operating in Italy, South America and China. Silvateam SpA is the holding company, having its headquarter in San Michele Mondovì in Italy, while Indunor SA is the Argentinean company of the Silvateam Group producing Silvafeed Q, the product considered in this EPD.
Founded at the beginning of 1900s, Indunor is the world leader in the manufacture and marketing of quebracho woods extracts. Production takes place at its manufacturing plants based at La Escondida, located in the province of Chaco (North East of Argentina), an area rich in quebracho forests which represent the primary economic resource of the entire district.

Environmental protection is one of Indunor's main goals and the preservation of the Chaco forests guarantees the continuation of its commercial activities.

Indunor manufactures vegetable tannins for tanning, enology and animal nutrition. It also produces natural resins and tannins for industrial applications.

Silvateam has set up one-to-one relationships with the people of the area and has a high regard for the requirements of the local community and the environment. Thus one century later, the company still operates in the region while using the same well-established principles:

- Promoting the social and economic well-being of the employees
- Creating new opportunities for the development of the community where the company is located
- Protecting the environment and preserving natural resources
- Sharing the benefits of the economic actions.

Indunor SA is the owner of the following certifications:

- ISO 9001:2015 "Production and comercialization of synthetic tannin and vegetable tannin. Comercialization of furfural"
- GMP+ B1 " Production of feed additives and premixtures"
- GMP+ B1 "Trade in Feed"
- PEFC ST 2002-2020 "Chain of Custody"
- Organic Certification according to the certification program recognized as equivalent to the provisions of EC Regulation No. 834/2007- Ecocert Organic Standard.


**Silvateam S.p.a.**
via Torre, 7 - 12080 San Michele Mondovì CN - Italy
Tel.+390174220111Fax +39 0174 220374

**Indunor S.A.**
Cerrito 1136, piso 11 - 1010 Ciudad Autónoma de Buenos Aires - Argentina
TE: +54 11 4590 0400

**Indunor S.A.**
San Martín s/n - 3514 La Escondida Chaco - Argentina



## SILVAFEED Q

Silvafeed Q is a tannin product obtained through an extraction process from the quebrach wood.

Tannins extracted from quebracho are widely recognised for their antioxidant, anti-inflammatory and protein binding properties, mechanisms through which they have shown to exert beneficial effects on gut motility, gut barrier protection and microbiota modulation, preventing harmful diseases such as coccidiosis and necrotic enteritis in monogastrics, as well as bloating and acidosis in ruminants.

At the same time, the efficacy of quebracho bioactive molecules has also been observed in terms of protein utilization efficiency improvement and GHG emissions mitigation.

## CONTENT DECLARATION

TANNIN CONTENT: min 70%

PH (10%): 4,40/5,20

HUMIDITY: max 10%

LIGNIN, CELLULOSE AND HEMICELLULOSE: qs 100%

SELLING FORM: brown-red powder

USE SECTOR: additive for animal feed

SILVAFEED Q is sold in bags or big bags of different sizes

| TYPE OF PACKAGING | PACKAGING WEIGHT PER UNIT [kg] | SILVAFEED Q CONTENT [kg] |
|---|---|---|
| Big bags raffia (PP) | 2,00 | 800 |
| Big bags raffia (PP) | 2,00 | 600 |
| Big bags raffia (PP) | 1,50 | 500 |
| Bags (PE) | 0,17 | 25 |
| SECONDARY AND TERTIARY PACKAGING | | |
| Wood pallet | 28,00 | - |
| Cardboard | 0,80 | - |
| PE sheets | 0,25 | - |
| PE film | 1,30 | - |

# Scope and type of EPD

The approach used in this EPD is “Cradle to grave”, according to reference PCR.

## MODULES

### UPSTREAM processes

- Feed ingredients production: wood source from the local forest area
- Production of fuels used in the upstream module
- Production of auxiliary products used such as detergents for cleaning, etc...

### CORE processes

- External transportation of the raw materials to the manufacturing plant
- Preparation of the final product, collateral production of the coproduct
- Packaging process
- Waste treatment of waste generated during manufacturing
- Production of electricity and fuels used in the core module

### DOWNSTREAM processes

- Transportation from preparation to an average retailer/distribution platform
- End-of-life processes of packaging waste

## EPD INFORMATION

EPD shall not be used for communicating environmental information to consumers/end users of the product, since end-of-life of the products is not included in the study.

**TYPE OF EPD:** cradle to grave (according to PCR)

**UN CPC CODE:** 233

**GEOGRAPHICAL SCOPE:** Argentina (production), Global (distribution)

**DECLARED UNIT:** 1kg of product delivered to the customer gate along with the required packaging (excluded from 1kg)

**REFERENCE YEAR FOR THE MANUFACTURING DATA:** 2021

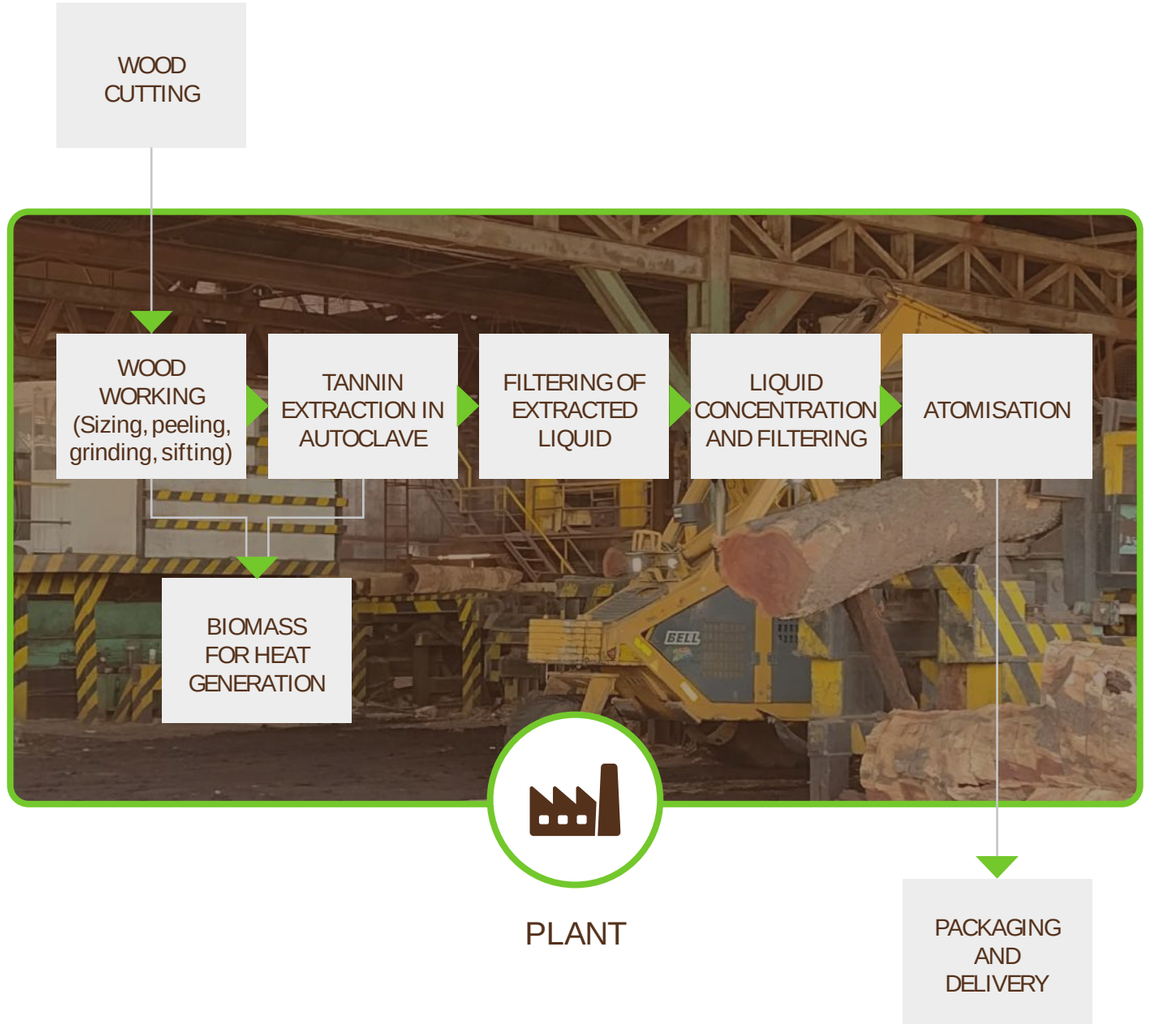
**SOFTWARE:** SimaPro 9.5.0.0

**MAIN DATABASES:** Ecoinvent (3.9), Industry data, cm.chemicals (Carbon Minds 2021)



# Manufacturing process

The main steps of the Silvafeed Q production process are shown in the following Figure:




From the Silvafeed Q production a co-product is obtained, that is the exhausted wood from the tannin extraction phase, which together with other wood scraps is used to feed the co-generator owned by the Indunor plant.

The co-generator produces both electricity, entirely sold to the grid, and steam, used in the Silvafeed Q production process. For this reason, the co-generator impacts have been considered only for the share associated to the steam production (74%).

# Environmental performance

**REPORTED PER DECLARED UNIT**: 1kg of product
**VERSION OF THE IMPACT ASSESSMENT METHOD**: Environmental impact has been assessed using a dedicated method developed by LCE to cope with the International EPD System method, version 2.0

## ENVIRONMENTAL IMPACT

| PARAMETER | | UNITS / D.U. | UPSTREAM | CORE | DOWNSTREAM | TOTAL |
|---|---|---|---|---|---|---|
| Global warming potential (GWP) | Fossil | kg $CO_2$ eq | 3.20E-02 | 7.78E-01 | 2.66E-01 | **1.08E+00** |
| | Biogenic | kg $CO_2$ eq | 3.74E-05 | 1.92E-03 | 1.40E-05 | **1.97E-03** |
| | Land use and land transformation | kg $CO_2$ eq | 4.94E-02 | 2.51E-04 | 7.90E-06 | **4.96E-02** |
| | TOTAL | kg $CO_2$ eq | 8.15E-02 | 7.80E-01 | 2.66E-01 | **1.13E+00** |
| Ozone layer depletion (ODP) | | kg CFC 11 eq | 6.06E-09 | 3.09E-08 | 4.18E-09 | **4.11E-08** |
| Acidification potential (AP) | | mol $H^+$ eq | 2.42E-04 | 3.93E-03 | 4.31E-03 | **8.48E-03** |
| Eutrophication potential (EP) | Aquatic freshwater | kg P eq | 7.62E-07 | 1.97E-06 | 3.33E-07 | **3.07E-06** |
| | Aquatic marine | kg N eq | 8.14E-05 | 1.67E-03 | 1.24E-03 | **3.00E-03** |
| | Aquatic terrestrial | mol N eq | 8.88E-04 | 1.81E-02 | 1.37E-02 | **3.27E-02** |
| Photochemical oxidant creation potential (POCP) | | kg NMVOC eq | 2.72E-04 | 5.20E-03 | 3.76E-03 | **9.23E-03** |
| Abiotic depletion potential (ADP) | Metals and minerals | kg Sb eq | 3.63E-08 | 2.28E-08 | 6.75E-08 | **6.75E-08** |
| | Fossil resources | MJ, net calorific value | 4.13E-01 | 1.06E+01 | 1.43E+01 | **1.43E+01** |
| Water deprivation potential (WDP) | | $m^3$ world eq. deprived | 1.24E-02 | 1.53E+00 | 3.49E-03 | **1.55E+00** |

GWP,t Global Warming Potential, total
GWP,f Global Warming Potential, fossil
GWP,b Global Warming Potential, biogenic
GWP,luluc Global Warming Potential, land use & land use change
ODP Ozone Depletion Potential
AP Acidification Potential
EP,f Eutrophication Potential, freshwater
EP,m Eutrophication Potential, marine
EP,t Eutrophication Potential, terrestrial
POCP Photochemical Ozone Creation Potential
ADP,e Abiotic Depletion Potential, non-fossil
ADP,f Abiotic Depletion Potential, fossil
WDP Water Deprivation Potential

## USE OF RESOURCE

| PARAMETER | | UNITS / D.U. | UPSTREAM | CORE | DOWNSTREAM | TOTAL |
|---|---|---|---|---|---|---|
| Primary energy resources Renewable | Use as energy carrier | MJ, net calorific value | 2.03E-02 | 8.16E-01 | 6.16E-03 | **8.43E-01** |
| | Used as raw materials | MJ, net calorific value | 0.00E+00 | 3.49E-01 | 0.00E+00 | **3.49E-01** |
| | TOTAL | MJ, net calorific value | 2.03E-02 | 1.17E+00 | 6.16E-03 | **1.19E+00** |
| Primary energy resources Non-renewable | Use as energy carrier | MJ, net calorific value | 4.78E-01 | 1.08E+01 | 3.38E+00 | **1.47E+01** |
| | Used as raw materials | MJ, net calorific value | 0.00E+00 | 2.04E-01 | 0.00E+00 | **2.04E-01** |
| | TOTAL | MJ, net calorific value | 4.78E-01 | 1.10E+01 | 3.38E+00 | **1.49E+01** |

PERE Renewable Primary Energy excluding Primary Energy used as raw material
PERM Renewable Primary Energy used as raw material
PERT Total use of Renewable Primary Energy
PENRE Non-renewable Primary Energy excluding Primary Energy used as raw material
PENRM Non-renewable Primary Energy used as raw material
PENRT Total use of Non-renewable Primary Energy


SILVAFEED Q

# System Boundary

## LAND USE EMISSIONS

To properly consider the environmental impact produced by the sourcing of wood for Silvafeed Q production, the variation of biomass carbon stock in the forest area due to the wood cutting and harvesting has been calculated, converted into $CO_2$ emissions and added to the upstream GWP LULUC module results.

For this calculation the requirements included in the IPCC 2006 and 2019 Guidelines for National Greenhouse Gas Inventories have been considered, following the method dedicated to “forest lands remaining forest lands” since the woodlands areas from where SIlvateam sources wood are managed in a responsible way, letting new trees grow to avoid deforestation.

Under this method, the change in carbon stocks in biomass ($\Delta C_B$) occurring during 1 year is obtained by subtracting the biomass carbon loss ($\Delta CL$) from the biomass carbon gain ($\Delta C_G$).

$$\Delta C_B = \Delta C_G - \Delta C_L$$

## PRODUCT INFORMATION

**CUT-OFF**

Production and end-of-life of packaging of auxiliary products

Machinery maintenance and their general life cycle impacts other than their consumptions and emissions during their operating phase in the year 2021

Process water used for refrigeration purposes which exit the plant in the same quantity and quality in which it entered.

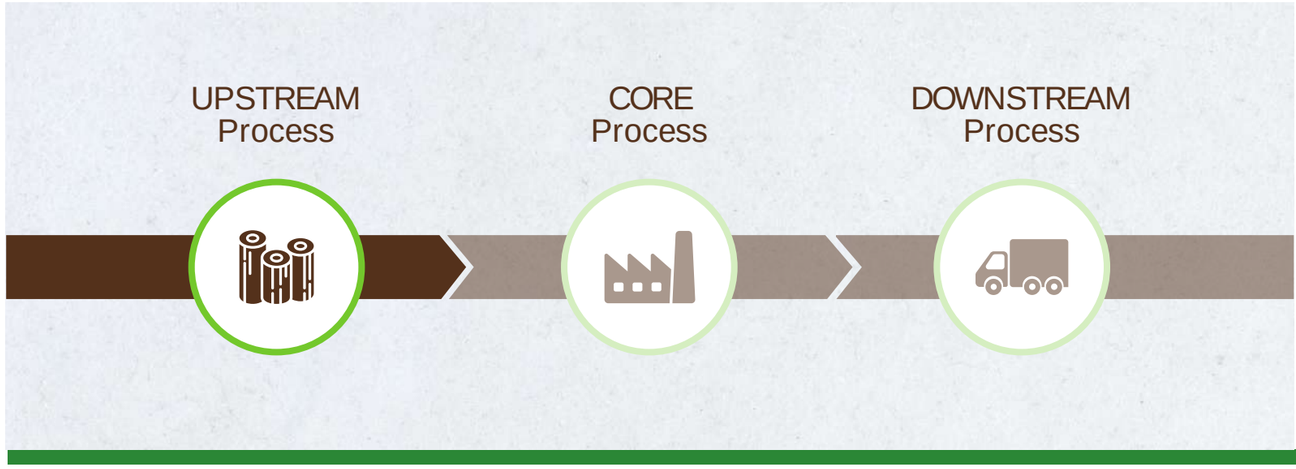
Sludges coming from the three evaporative basins of the plant, since it was not possible to track this flow

**ALLOCATION**

Physical allocation, by mass. Environmental impacts have been allocated also to the biomass co-product sent to the co-generator.



# Upstream process

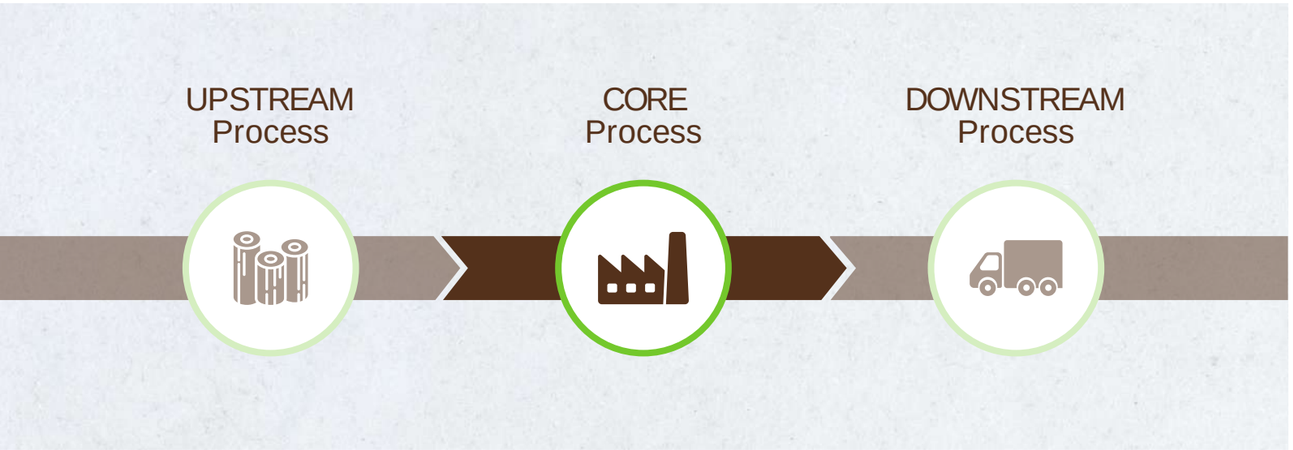



**Feed ingredients production:**
wood sourced from the local forest area

**Production of fuels used in the upstream module:**
gas oil and naptha

**Production of auxiliary products used such as chemical products for water treatments etc.**

# Core process




**Transportation of the raw materials to the manufacturing plant, by truck**

**Transportation of the auxiliary materials to the manufacturing plant, by truck**

**Production of electricity and fuels used in the core module:**

- Electricity from Argentinean grid
- LPG and Diesel
- Steam from Indunor co-generator

**Processing of raw materials for the preparation of the final product**

**Emissions to air**

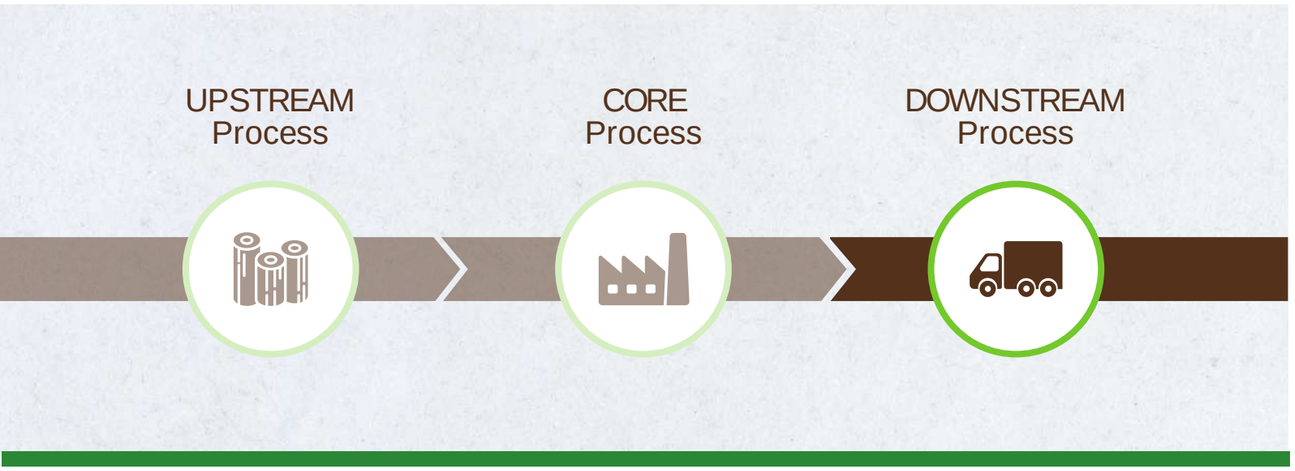
**Packaging raw material supply and transport, by truck**

**Emissions to water**

**Waste treatment of waste generated during manufacturing**

**Water usage from lake and from well**

# Downstream process




**Transportation from Indunor to clients**

**37%** to European clients

**63%** to stock in SilvaTeam headquarter in Mondovì

**End-of-life processes of packaging waste**

Packaging waste transportation:
**50 km** by truck

Packaging final destination:
Landfill **24.70%**
Energy recovery **33.50%**
Recycling **41.80%**

The end of life stage of the product Silvafeed Q has not been considered because of its use in animal feed, as defined by the PCR.



# References


- Life Cycle Assessment applied to tannin product Silvafeed Q for animal feeding, SilvaTeam S.p.A, 2023
- General Programme Instructions for the International EPD® System v. 4.0, 2021-03-29
- PCR 2016:03 v. 2.0: Preparations used in animal feeding for food-producing animals (International EPD® System, 2016)
- ISO 14040:2006
- ISO 14044:2006
- ISO 14025:2006
- 2006 IPCC Guidelines for National Greenhouse Gas Inventories
- 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories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