
De Cecco extra virgin olive oil

Environmental Product Declaration

- Reference PCR: PCR 2010:07 (Version 2.1), CPC SUBCLASS 21537
VIRGIN OLIVE OIL AND ITS FRACTIONS
- Geographic Scope: Europe and North America
- Registration number: S-P-OO410
- Version 0 of the 2017-07-17
- Validity Date: 2020-07-17

For more information about the EPD program, visit the website www.environdec.com

INFORMATION ABOUT THE COMPANY AND THE PRODUCT

De Cecco SpA

History

Molino e Pastificio Fratelli De Cecco was founded in 1886 in the Abruzzo region, at the foot of the Maiella. The company specialised in the production of pasta and soon became a leading company in the national and international market, with a well-recognised brand for its high quality, valorisation of food traditions and production processes respecting the natural environment. Today De Cecco is a group with a turnover of 437 million euros in 2016, of which more than a third is represented by export. In the 1980s, the company adopted a diversification strategy that adds to pasta a series of products characteristic of the Italian and Mediterranean food tradition, including extra virgin olive oil. Olearia Fratelli De Cecco was founded 1986 and its olive oil was marketed for the first time in 1988. The current range includes classic and fruity extra virgin olive oil, of Italian and European Community origin, from organic farming and a series of PDO and PGI olive oil.

Social and Environmental Responsibility Policy

De Cecco social and environmental responsibility coincides with the orientation towards the excellence of its entrepreneurial style, starting from product quality, operating with absolute transparency and according to the principles of fair competition at the basis of the free market, and meeting the needs and demands of all its stakeholders. Indeed, De Cecco has obtained a series of certifications, including ISO14001:2004. The environmental certification is a voluntary self-control and accountability tool to pursue continuous improvement of its environmental performance. The System allows to identify and protect significant environmental aspects and thus ensure its full respect. De Cecco has always been committed to safeguarding the ecosystem in which its productive activities are incorporated, so it decided to develop an Environmental Management System in compliance with ISO 14001: 2004.

With this system the company aims at:

- ensuring compliance with environmental legislation and continuous improvement of its environmental performance;
- continuously monitoring its environmental performance;
- planning and implementing the improvement of such performance by reducing the environmental impact;
- preventing any environmental accidents.

Other Mandatory Information

Main olives production sites	The olives used by De Cecco are produced in Italy, Spain, Greece and Portugal
Main oil production sites	The oil used by De Cecco is produced in Italy, Spain, Greece and Portugal
De Cecco oil production and packaging site	De Cecco olive oil is bottled at the plant located in Fara San Martino plant, Italy
Reference Contact	Mr. Bonifacio Sulprizio (engineer) email BonifacioSulprizio@dececco.it
Environmental management system	ISO 14001 for the Fara San Martino plant

The Production Process:

Only with the utmost care, during all stages of in all phases of cultivation, a great fruit can be obtained, from which an excellent olive oil is extracted.

Olive is the fruit that is extracted from *Olea europea* L.; olive trees produce fruits, depending on the breeding system and the geographical area, from the third to the sixth year of life; during the life cycle of the plant, leading to the production of the fruits, many cultivation phases alternate, such as soil preparation, fertilization, plant protection treatments, irrigation, pruning and harvesting.

After the olives are harvested, once ripe, they must be immediately transported to the mill to extract their precious liquid within 24 to 48 hours.

At the mill, olives are washed, crushed, ground to paste, extracted (preferably centrifuged) and separated to obtain extra virgin olive oil, a sort of “fruit juice”.

Product analysis

Extra virgin olive oil is the only vegetable oil that is extracted from a fruit that is harvested from *Olea Europea* L.; olive trees produce fruits, depending on the breeding system and the geographical area, from the third to the sixth year of life; during the life cycle of the plant, leading to the production of the fruits, many cultivation phases alternate, such as soil preparation, fertilization, plant protection treatments, irrigation, pruning and harvesting.

According to the mandatory labelling, “Superior category olive oil obtained directly from olives and solely by mechanical means”, extra virgin olive oil is also one of the few fats to be obtained only mechanically through physical processes, without the use of chemicals.

Once obtained from milling processing, extra virgin olive oil will only be filtered and packaged.

Extra virgin olive oil is the only product intended for human consumption that has to pass a sensory analysis for the purpose of product classification.

In addition to the Panel Test, in order to be classified as extra virgin, the oil must also undergo a series of rigorous laboratory chemical analyses.

The table below shows only a minimum set of specific parameters required by current legislation.

The quality of the oil is defined by the level of acidity that is quantified at the laboratory. Such level is low if olives are healthy and little time has passed from to crushing. According to the current legislation, the acidity of Extra Virgin Oil must be lower than 0.8%. Low acidity means a value less than or equal to 0,4%. Other parameters that define the characteristics of olive oil are colour (which, however, does not affect the quality), aroma and taste.

Extra virgin olive oil is the only product that comes directly from the fruit and keeps its antioxidant and healthy properties intact. Extra virgin olive oil is more digestible than seed oil because of its high concentration of oleic acid that, by stimulating bile, promotes digestive functions.

The packaging materials used for De Cecco olive oil are the following:

1L glass olive oil bottle

Type	Quantity	Unit of measurement
Paper	0,0029	Kg
Cardboard	0,0260	Kg
Glass bottle	0,7460	Kg

1L aluminium olive oil bottle

Type	Quantity	Unit of measurement
Paper	0,0029	Kg
Cardboard	0,0260	Kg
Aluminium	0,0820	Kg
Plastic	0,0003	Kg

Characteristics of the olive oil under analysis

Classico De Cecco extra virgin olive oil is yellow with green reflections, is full-bodied and has a fairly fruity aroma; pleasant and balanced, it is also characterised by a delicate spicy flavour. Its acidity is less than 0.8 %. It is ideal for raw use and excellent for frying.

Table of extra virgin olive oil oil features¹

¹ Regolamento Europeo 2568/91 e successive modifiche

Acidity (%)	≤ 0.8
Number of peroxides (mEqO ₂ /kg)	≤ 20
Wax (ppm)	≤ 150
Stigmastane (ppm)	≤ 0,05
K232	≤ 2,50
K270	≤ 0,22
Delta-k	≤ 0,01
Acidic composition:	
Myristic acid (%)	≤ 0.03
Linolenic acid (%)	≤ 1.00
Arachidic acid (%)	≤ 0.60
Eicosenoic acid (%)	≤ 0.50
Behenic acid (%)	≤ 0.20
Lignoceric acid (%)	≤ 0.20
Sterol composition:	
Cholesterol (%)	≤ 0,5
Brassicasterol (%)	≤ 0.1
Campesterol (%)	≤ 4.0
Stigmasterol (%)	<Campesterol
Betasitosterol (%)	≥ 93.0
Delta-7-Stigmastenol (%)	≤ 0,5
Total sterols (mg/kg)	≥ 1000

How to use it

Consumers can evaluate olive oil through a simplified tasting process consisting of following these steps. 1) Pour the equivalent of one tablespoon of oil in a glass; 2) cover the glass and heat it with your hands; 3) remove the cover and sniff the oil to enjoy its aromas; 4) take a sip while tightening the teeth and ingest a small amount, then keep it in the mouth to feel its flavours. 5) With the lips closed, aspirate the air to vaporise the oil in the oral cavity, to evaluate the different nuances of its aromas and flavours; 6) expel the air from the mouth and consider with particular attention the stimuli that remain after tasting it, evaluating its pleasantness and persistence. To better assess its qualities, olive oil must be tasted between meals and with the mouth free from flavours of coffee, candy, smoke or anything else that can alter its aroma and taste sensations.

It is recommended for all cooking uses, whether raw or cooked.

To preserve olive oil, it is best to store it in perfectly clean containers and away from sources of light, heat and air.

Declared unit

The declared unit is 1 litre of extra virgin olive oil as provided for in the PCR for these studies. De Cecco sells both glass and aluminium olive oil bottles. This study refers to 1L glass and aluminium olive oil bottles.

ENVIRONMENTAL PRODUCT DECLARATION

Methods

The data covered by this declaration refers to the extra virgin olive oil bottled for the Italian market and refer to the year 2015.

For the calculation of the results reported below in this EPD® the Life-Cycle Assessment (LCA) method was used. LCA is also a standardised methodology in accordance with ISO 14040, which technically identifies it as a “compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle”.

An LCA applied to a product system, therefore, addresses the efficiency study of the system in question towards the protection of the environment and men's health and to the saving of resources.

In particular, then, LCA allows to estimate the result of impacts from all phases of the product life cycle, thus providing an exhaustive overview of the product's environmental characteristics and a more realistic definition of environmental data that can be used when choosing between several products.

Non-selected generic secondary data were not taken into consideration.

System boundaries

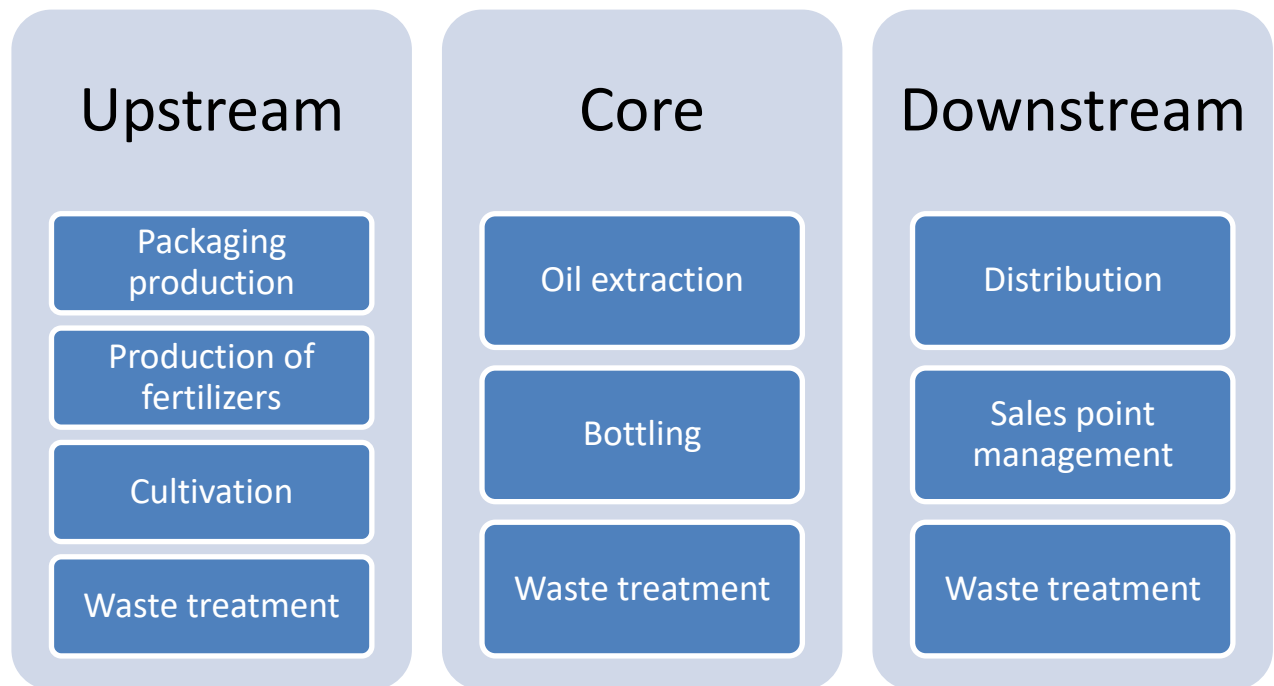


Fig. 1: System boundaries

The environmental data published below refer to the entire life cycle of De Cecco bottled olive oil.

The steps considered are the following:

- Olive cultivation
- Production of primary and secondary packaging
- Olive pressing (oil mill)
- Oil bottling
- All stages of transportation

Below is a detailed description of the steps of the product being considered.

“Upstream” processes include the introduction of raw materials and equipment required for the product production in the system:

- Packaging production
- The operations for the transformation of the soil used, if the olive trees have a life expectancy of less than 25 years.
- Planting operations, including the installation of the irrigation system, if the olive trees have a life expectancy of less than 25 years
- The generation of the energy used (thermal or electrical) in the agricultural process
- The cultivation of the olives (CPC0145) used for oil production for which the following input flows should be considered:
 - The production of inputs used as fertilizers
 - Waste management
 - The use of wood obtained as a by-product of pruning or as the end of life of olive trees

- Transport of used materials
- Water extraction and use
- Harvesting auxiliary materials

“Core” processes include:

- Washing olives, removing leaves and any foreign matter
- Extraction of virgin olive oil
- Waste and by-product management
- Storage of virgin olive oil
- Transport of olives to the extraction site (olive mill)
- Transport to the packaging site
- External transport of packaging and raw materials and energy used in core processes.

Downstream processes include:

- Transport from the packaging and storage site to a distribution platform
- Transport to the distributor
- Waste management/recycling
- Use of the product by consumers
- Recycling or packaging management after use

For the flow characterisation work, the following methods were considered:

- Greenhouse gas emissions (expressed as global warming potential (GWP) in a 100-year time span).
- Ozone Layer Reduction Gases (expressed as the sum of the ozone depletion potential (ODP) ratio between the impact on the ozone of a chemical compound and the impact of CFC-11 having the same mass of the substance under consideration in a 20-year time span).
- The acidifying gas emissions (expressed as the sum of the acidification potential (AP) that corresponds to the potential amount of H⁺ per unit of mass emitted in relation to that caused by a SO₂ - sulphur dioxide mass unit).
- Emissions into water of substances that contribute to the creation of atmospheric ozone (expressed in PO₄-equiv. Kg).
- Emissions into water of substances that contribute to the reduction of aquatic oxygen (expressed in PO₄-equiv. Kg).
- Use of land expressed in m² per year.

The tables below shows the results obtained for glass packaging

			Upstream		Core		Downstream
Impact category	Unit	Total	Cultivation	Packaging (Glass)	Pressing	Bottling	Transport and distribution
Acidification	SO ₂ eq. kg	0.014	0.006	0.005	0.001	0.002	0.000
Eutrophication	PO ₄ ---eq. kg	0.006	0.000	0.006	0.000	0.000	0.000
Global warming (GWP100)	CO ₂ eq. Kg	1.774	0.601	0.682	0.129	0.294	0.067
Ozone Layer Reduction (ODP)	CFC-11 eq. Kg	0.000	0.000	0.000	0.000	0.000	0.000
Photochemical oxidation	kg C ₂ H ₄	0.000	0.000	0.000	0.000	0.000	0.000
Use of land	m ² y	1.724	0.015	0.383	1.334	0.006	0.001

The tables below shows the results obtained for aluminium packaging

			Upstream		Core		Downstream
Impact category	Unit	Total	Cultivation	Packaging (Aluminium)	Pressing	Bottling	Transport and distribution
Acidification	SO ₂ eq. Kg	0.010	0.006	0.002	0.001	0.002	0.000

Eutrophication	PO4--- eq. Kg	0.001	0.000	0.000	0.000	0.000	0.000
Global warming (GWP100)	CO2 eq. Kg	1.561	0.601	0.470	0.129	0.294	0.067
Ozone Layer Reduction (ODP)	CFC-11 eq. Kg	0.000	0.000	0.000	0.000	0.000	0.000
Photochemical oxidation	kg C2H4	0.000	0.000	0.000	0.000	0.000	0.000
Use of land	m2y	1.546	0.015	0.205	1.334	0.006	0.001

Resource Consumption:

For the production of one litre of oil, the following resource consumption was assessed.

Non-renewable resources:

- Material resources
- Energy resources (used for energy conversion)

Renewable resources:

- Material resources (biomass converted into product is not taken into account)
- Energy resources (used for energy conversion)
- Use of water
- Consumption of electricity (during production) and main supplier

The tables below show the results obtained for glass packaging

			Upstream		Core		Downstream
Unit	Total		Cultivation	Packaging (Glass)	Pressing	Bottling	Transport and distribution
Water consumption	L	209.772	189.970	14.301	4.032	1.057	0.412

			Upstream		Core		Downstream
Unit	Total		Cultivation	Packaging (Glass)	Pressing	Bottling	Transport and distribution
Electricity	KWh	0.124	0.000	14.301	0.104	0.020	0.412

			Upstream		Core		Downstream
	Unit	Total	Cultivation	Packaging (Glass)	Pressing	Bottling	Transport and distribution
Non-renewable resources (Total)	Kg	3.591	0.140	0.334	2.763	0.275	0.412

Differences compared to the previous version of the EPD

Environmental Impact Data have improved in this version of the EPD as there is a reduction in the use of fertilizers.

MANDATORY DEFINITION

EPD® should be reviewed every three years.

EPD®s are a useful tool for comparing the declared environmental performance for products belonging to the same category of product. However, they can only be compared to EPD®s that have been constructed following the specific rules (PCRs) published by the International EPD® Consortium – IEC (www.environdec.com) body.

The EPD® described herein was prepared according to PCR 2010:01, CPC 2371: “Uncooked or otherwise prepared Extra virgin olive oil”. EPD within the same category of products, but from different programs may not be comparable.

This EPD and its LCA study were carried out with the collaboration and with the support of Greenactions.

PCR reviewed by: George Michalopoulos, email: parabem@hol.gr
Independent declaration and data audit in accordance with ISO 14025: <input type="checkbox"/> Internal X External
Independent auditor: Mrs. Michela Gallo, Salita Bella Giovanna 1/13 Genova - Italy, michela.gallo@unige.it
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CONTACTS

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