LA SEMOLA KRONOS®

ENVIRONMENTAL PRODUCT DECLARATION OF KRONOS® DURUM WHEAT SEMOLINA

MOLINO GRASSI

EPD®
ENVIRONMENTAL PRODUCT DECLARATION

The EPD should provide updated information and may require to be updated if the condition changes. The validity stated is, therefore, subject to ongoing registration and publication on www.environdec.com.
The present environmental declaration has been redacted in compliance with ISO 14025:2006.

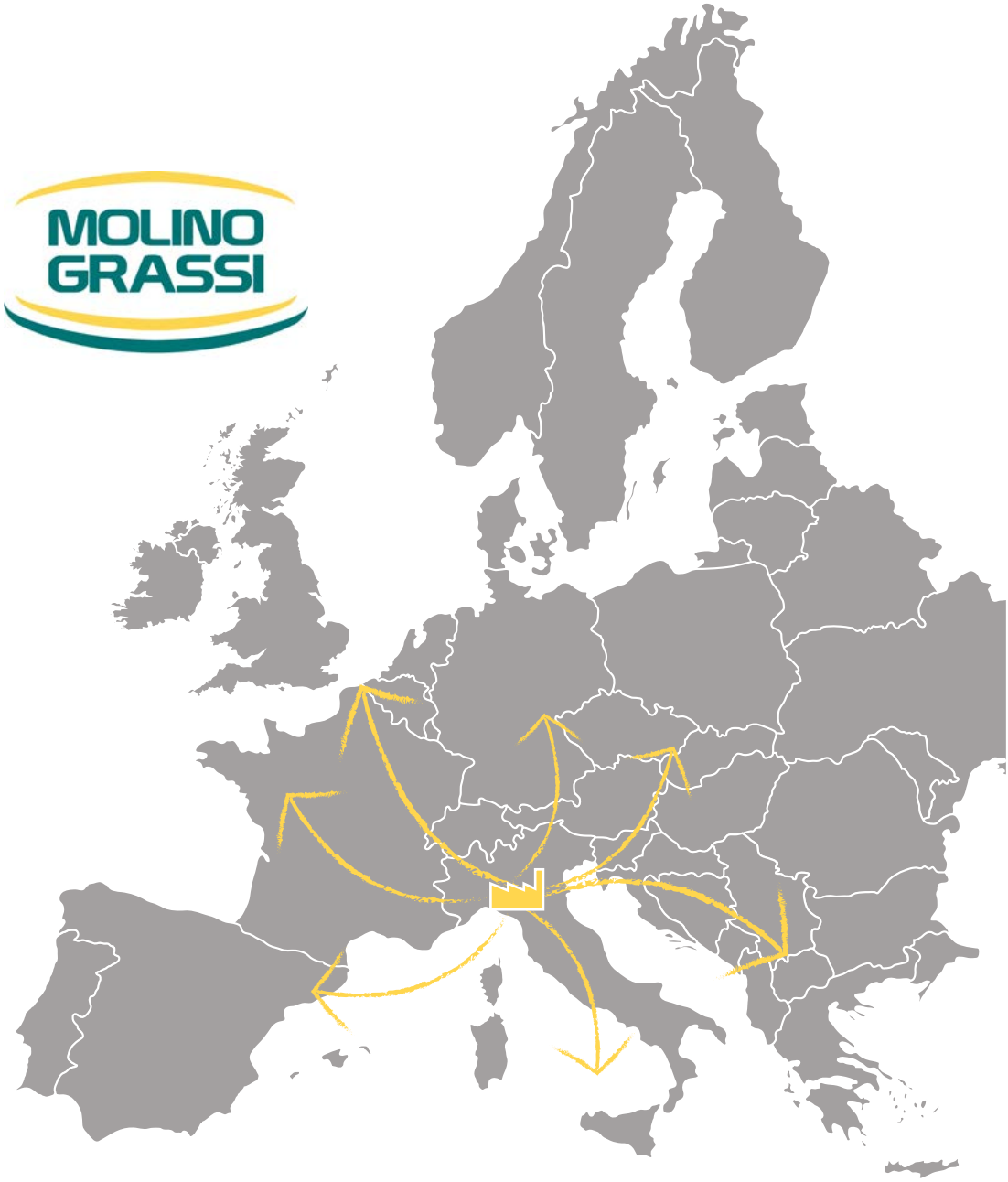
CPC CODE	PUBLICATION DATE	REVISION DATE	VALID UNTIL	REGISTRATION NUMBER	PROGRAMME	PROGRAMME OPERATOR
2311 - Wheat and meslin flour	19/02/2015	1/09/2021, revision 3	10/09/2026	S-P-00667	The International EPD® System www.environdec.com	EPD International AB

1. THE COMPANY

Established in 1934, Molino Grassi is the story of a family company. Three generations, from the founder to his grandchildren, who over the years have created, developed and given continuity to an ambitious project: to become leaders in soft and durum wheat processing, focusing on quality flour and semolina creation. The company has its headquarters in Parma, heart of the so-called Food Valley in the centre of Emilia Romagna, the most important cereal-growing region of Northern Italy, where it employs around 50 staff.

For several years now the company has established a new type of relation with the agricultural world, developing a more collaborative and less competitive productive thread. This approach has allowed Molino Grassi to become an important benchmark in testing new typologies and variety products: the organic range, the QB range, the ancient grains' world, the baby food range and the Kronos® durum wheat.

In 1996 Molino Grassi obtained ISO 9001 certification of its quality system. In 2011 the company achieved the goal of BRC (British Retailer Consortium) and IFS (International Food Standard), the two standard certifications suggested by mass retailers to guarantee the food quality and safety to end consumers. Since 1994, year of the company's first organic certification according to Re. CEE 2092/91, along time it has adapted its production chains to the different organic international standards.



2. THE PRODUCT

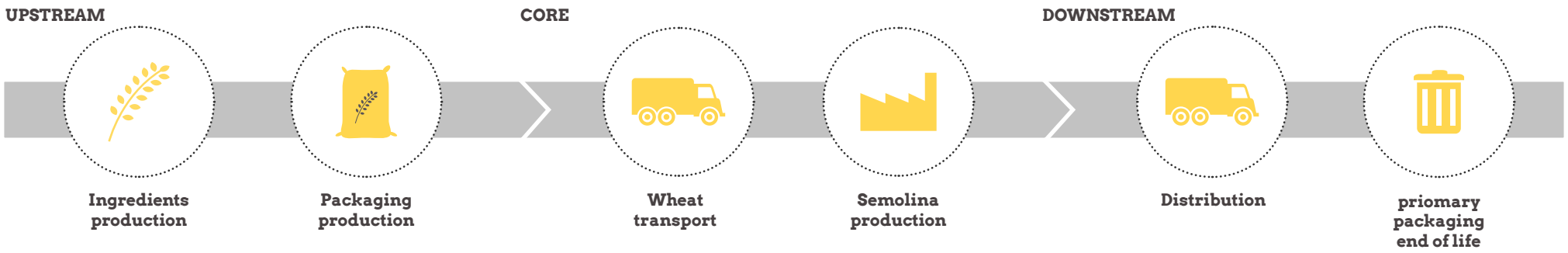
Semola Kronos® is produced in the Molino Grassi plant in Fraore (PR) starting from organic durum wheat. It is sold in 25 kg paper sacks.

Kronos® semolina is characterized by an high protein content, an intense yellow colour but most of all by the tenacity of gluten; for this reason it is ideal for the production of top quality pasta, special pasta and pasta for food service.

Below the nutritional facts per 100 g of product are reported.

NUTRITIONAL FACTS per 100 g of product	
Energy value	1459 / 343 kJ / kcal
Proteins	12,40 g
Carbohydrates	68,88 g
of which sugar	1,20 g
Fats	1,75 g
of which saturated	0,50 g
Fibres	3,00 g
Salt	0,012 g

3. THE CALCULATION OF ENVIRONMENTAL PERFORMANCE



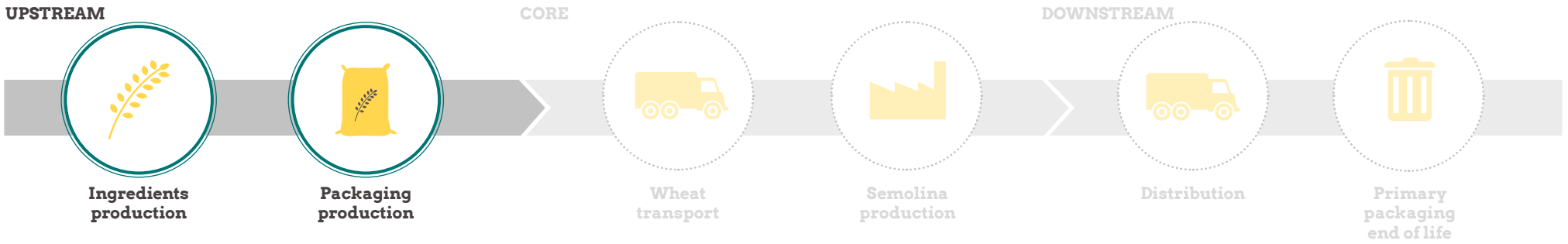
Environmental performance was evaluated through the Life Cycle Assessment (LCA) methodology, taking into account the whole supply chain, from the cultivation of raw materials to the distribution of the final product. The study was conducted according to the Product Category Rules 2013:04 Grain mill products. The contribution of generic data represents less than the 10% of the total environmental impact.

DECLARED UNIT
Results are referred to 1 kg of product and the related packaging

SYSTEM BOUNDARIES
The analysed system includes wheat cultivation, packaging production and production and packaging of flour at the Fraore Plant. It is not included the use phase of flour, since it could be used, with other ingredients, for different productions and with different technologies. Information about the end of life of packaging are reported in page 5.

DATA QUALITY AND CUT-OFF
Data quality and cut-off rules follow the reference PCR indications.

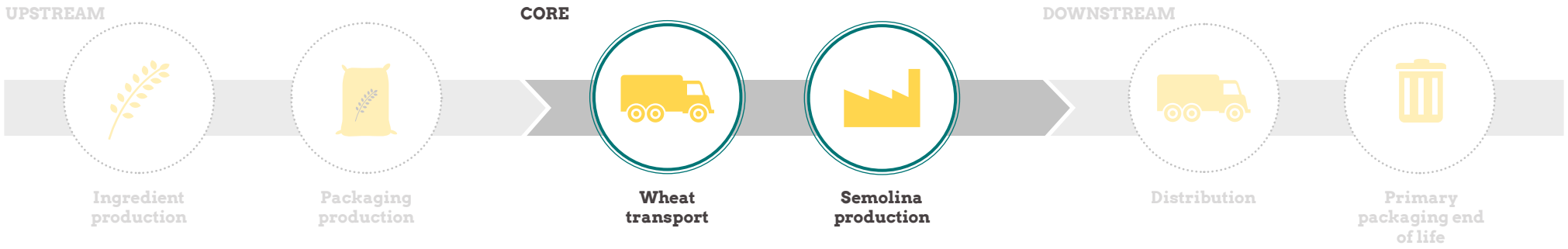
4. UPSTREAM



Data about Kronos® wheat cultivation were collected from a sample of farms representative of the main areas where it is cultivated and the most common typologies of farms.

Kronos® durum wheat semolina is packed in 25 kg paper sacks, weighting 150 g.

5. CORE



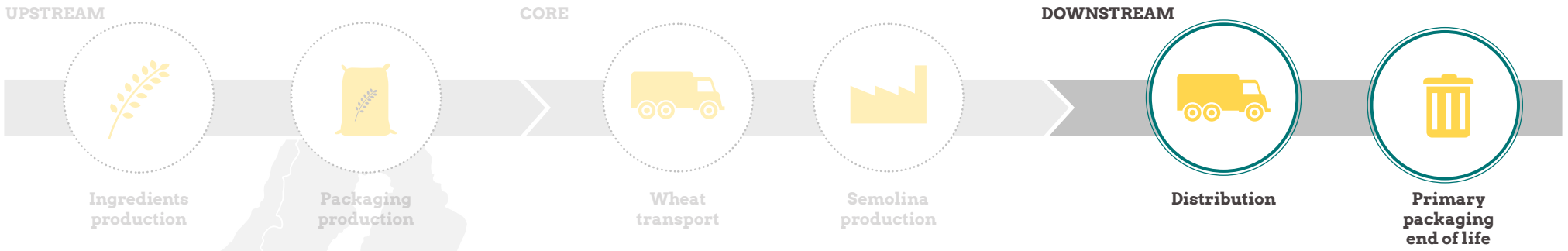
Average distance between wheat cultivation area and Molino Grassi mill has been calculated considering a ewighted average on km and amount of wheat tranpsorted.

Data about milling and packaging of semolina were collected from the Fraore (PR) plant.. They refers to 2020 production.

Data about energy consumption, water consumption and waste generation were collected. They have been allocated on total, in comliance with the reference PCR.

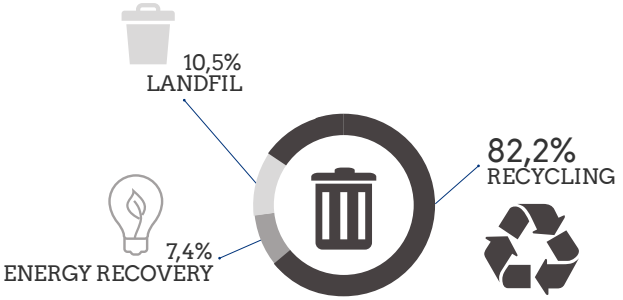
The electricity consumed in the plant is entirely composed of energy from hydroelectric sources.

6. DOWNSTREAM



Kronos® durum wheat semolina is distributed in Italy and in several european and extra-european countries. Environmental impacts of distribution were calclated taking into account the distances and the amounts delivered.

The environmental impacts related to primary packaging end of life were calculated considering the average waste scenario generated in the major markets.



7. ENVIRONMENTAL PERFORMANCE

data referred to 1 kg of product

POTENTIAL ENVIRONMENTAL IMPACT		UNIT	UPSTREAM		CORE		DOWNSTREAM		TOTAL
			Ingredients production	Packaging production	Wheat transport	Flour production	Distribution	Primary packaging end of life	
Global warming potential (GWP)	Fossil	kg CO_2 eq.	2,33E-01	6,48E-03	4,31E-02	3,40E-04	3,77E-02	8,11E-06	**3,21E-01**
	Biogenic	kg CO_2 eq.	4,09E-05	3,50E-05	2,25E-06	7,87E-05	1,97E-06	8,59E-04	**1,02E-03**
	Land use and land transformation	kg CO_2 eq.	4,72E-05	1,51E-05	3,66E-07	2,79E-08	3,21E-07	5,67E-09	**6,30E-05**
	TOTAL	**kg CO_2 eq.**	**2,33E-01**	**6,53E-03**	**4,31E-02**	**4,19E-04**	**3,77E-02**	**8,68E-04**	3,22E-01
Acidification potential (AP)		kg SO_2 eq.	5,13E-03	3,02E-05	1,80E-04	3,88E-07	1,58E-04	2,13E-07	**5,50E-03**
Eutrophication potential (EP)		kg PO_4^{3-} eq.	3,84E-03	7,28E-06	2,85E-05	1,64E-06	2,50E-05	5,03E-07	**3,90E-03**
Photochemical Oxidant Formation Potential (POFP)		kg NMVOC eq.	1,03E-03	2,52E-05	2,14E-04	2,01E-07	1,88E-04	5,12E-07	**1,46E-03**
Abiotic depletion potential – Elements		kg Sb eq.	1,69E-06	1,31E-08	2,58E-09	7,34E-11	2,26E-09	1,51E-11	**1,71E-06**
Abiotic depletion potential – Fossil fuels		MJ, net calorific value	1,67E+00	1,06E-01	6,04E-01	3,09E-04	5,29E-01	9,02E-05	**2,91E+00**
Water scarcity potential		m^3 eq.	5,02E-01	1,09E-02	-1,37E-04	1,33E-01	-1,20E-04	2,93E-06	**6,45E-01**

7. ENVIRONMENTAL PERFORMANCE

data referred to 1 kg of product

USE OF RESOURCES		UNIT	UPSTREAM		CORE		DOWNSTREAM		TOTAL
			Ingredients production	Packaging production	Wheat transport	Flour production	Distribution	Primary packaging end of life	
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	2,61E-02	1,58E-01	8,67E-04	3,76E-01	7,59E-04	2,93E-05	**5,62E-01**
	Used as raw materials	MJ, net calorific value	0,00E+00	9,22E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**9,22E-02**
	TOTAL	MJ, net calorific value	**2,61E-02**	**2,50E-01**	**8,67E-04**	**3,76E-01**	**7,59E-04**	**2,93E-05**	**6,54E-01**
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	1,71E+00	1,32E-01	6,05E-01	4,20E-04	5,30E-01	1,26E-04	**2,98E+00**
	Used as raw materials	MJ, net calorific value	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**0,00E+00**
	TOTAL	MJ, net calorific value	**1,71E+00**	**1,32E-01**	**6,05E-01**	**4,20E-04**	**5,30E-01**	**1,26E-04**	**2,98E+00**
Secondary material		kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**0,00E+00**
Renewable secondary fuels		MJ, net calorific value	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**0,00E+00**
Non-renewable secondary fuels		MJ, net calorific value	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**0,00E+00**
Net use of fresh water		m^3	1,20E-02	3,32E-04	1,23E-05	2,91E-03	1,07E-05	2,40E-07	**1,52E-02**

7. ENVIRONMENTAL PERFORMANCE

data referred to 1 kg of product

WASTE PRODUCTION AND OUTPUT FLOWS		UNIT	UPSTREAM		CORE		DOWNSTREAM		TOTAL
			Ingredients production	Packaging production	Wheat transport	Flour production	Distribution	Primary packaging end of life	
Waste production	Hazardous waste disposed	kg	3,92E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**3,92E-08**
	Non-hazardous waste disposed	kg	6,10E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**6,10E-04**
	Radioactive waste disposed	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	**0,00E+00**
Output flows	Components for reuse	kg	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	0,00E+00	0,00E+00	0,00E+00	4,98E-04	0,00E+00	4,93E-03	**5,43E-03**
	Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,40E-04	**4,40E-04**
	Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	2,20E-04	**2,20E-04**
	Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,60E-04	**4,60E-04**

8. DIFFERENCES VERSUS PREVIOUS VERSION

The differences versus previous EPD versions are due manly tothe update:

- of wheat production yields
- of the energy mix of the plant
- of the emission factors related to the use of fertilizers (following the update of the reference PCR)
- of databases
- of the characterization factors of the indicators (following the update of the EPD System guidelines)

9. ADDITIONAL INFORMATION

Environmental declarations within the same product category but from different programme operators may be not comparable.

For further information: **www.environdec.com**

REFERENCES

- *Ecoinvent database (www.ecoinvent.ch)*
- *International EPD System, General Programme Instructions (EPD), ver. 3.01 of 18/09/2019;*
- *ISO 14040/14044:2021, ISO series on Life Cycle Assessment (Valutazione del ciclo di vita) www.iso.org*
- *Molino Grassi, Life Cycle Assessment di Farina Bio, Semola Bio e semola Kronos, revisione 01/09/2021*
- *Product Category Rules for Grain Mill Products 2013:04 ver. 3.0 of 30/11/2020*
- *SimaPro versione 9.1 (www.pre.nl)*

10. INFORMATIONS

PROGRAMME OPERATOR

EPD Internationa AB. Box 210 60.
SE-100 31 Stockholm Sweden
Email: info@environdec.com

PRODUCT CATEGORY RULES (PCR)

Grain Mill Products 2013:04 ver. 3.0 of 30/11/2020. UN CPC 231

PCR REVIEW

conducted by: Technical Committee of the International EPD® system
Chair: Lars-Gunnar Lindfors
Contact via info@environtec.com

INDIPENDENT VERIFICATION

Indipendent third-party verification of the declaration and data, according to ISO 14025:2006:
☑ EPD verification
☐ EPD process certification

THIRD PARTY VERIFICATION

CCPB S.r.l.
Viale Angelo Masini 36
Bologna, 40126

Accreditation number: 043B

PROCEDURE FOR FOLLOW-UP OF DATA

During EPD validity involves third party verifier
☑ yes ☐ no

TECHNICAL REPORT

All detailed hypotheses of the study are reported in the LCA report on the production of organic soft wheat flour, organic durum wheat semolina and Kronos durum wheat semolina.

EPD declaration, within the same product category but from different systems or programs, may not be compatible.

Molino Grassi is the sole owner and has sole responsibility for the contents of the EPD

CONTACTS

For more information relating to the activities of Molino Grassi or in this environmental declaration, please contact:

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11. GLOSSARY

ACIDIFICATION POTENTIAL – AP

Acidification is a phenomenon for which precipitation is unusually acidic, meaning that it has substandard levels of pH. It can have harmful effects on plants, aquatic animals and infrastructure. Acid rain is caused by emissions of SO_2, NO_x and NH_3. The acidification potential is measured in mass of sulfur dioxide equivalent (SO2-eq).

EUTROPHICATION POTENTIAL – EP

Eutrophication is an abnormal proliferation of vegetation in the aquatic ecosystems caused by the addition of nutrients into rivers, lakes or ocean, which determinates a lack of oxygen. The eutrophication potential is mainly influenced by emission into water of phosphates and nitrates. It is expressed in mass of PO_{4-}^{-}equivalent.

PHOTOCHEMICAL OXIDANT FORMATION POTENTIAL - POFP

Production of compounds which, by the action of light, are able to promote an oxidation reaction that leads to the production of ozone in the troposphere.
The indicator mainly includes VOC (volatile organic compounds) and is expressed in grams of VOC equivalent (g NMVOC - equivalent).

GLOBAL WARMING POTENTIAL – GWP

Global warming potential of a product (also called Carbon Footprint) is the total amount of greenhouse gases produced along the entire life cycle. It is expressed in equivalent mass of carbon dioxide (CO_2-eq).
In agriculture a significant contribution is given by the emission of nitrous oxide (N2O) due to the fertilizers use.