



ENVIRONMENTAL PRODUCT DECLARATION

*In accordance with ISO 14025
and EN 15804:2012+A2:2019 for:*

MAPE-ANTIQUE DEHUMIDIFYING LINE

Mape-Antique Rinzaffo
Mape-Antique MC
Mape-Antique MC Macchina
Mape-Antique NHL ECO Rinzaffo
Mape-Antique NHL ECO Risana

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

Programme:
**The International
EPD® System;**
www.environdec.com

Programme
operator:
EPD International AB

EPD registration
number:
S-P-02133

Publication
date:
2020-11-13

Valid until:
2025-11-12

Geographical
scope:
International

Revision date:
2021-08-11

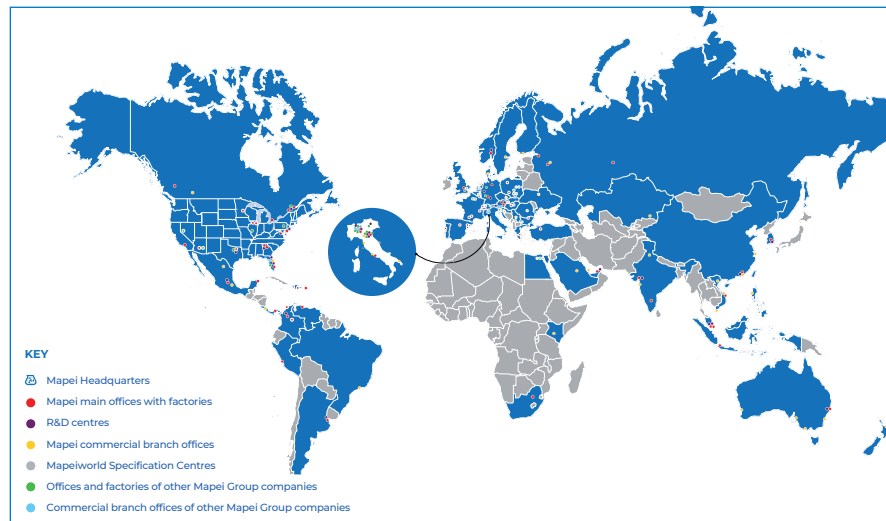


1. COMPANY DESCRIPTION / GOAL & SCOPE

Founded in 1937 in Milan, Italy, Mapei produces adhesives and complementary products for laying all types of floor, wall and coating materials, and also specializes in other chemical products used in the building industry, such as waterproofing products, specialty mortars, admixtures for concrete, cement additives, products for underground constructions and for the restoration of concrete and historical buildings.

There are currently 89 subsidiaries in the Mapei Group, with a total of 81 production facilities located around the world in 36 different countries and in 5 different continents. Mapei also has 31 central laboratories. Most locations are ISO 9001 and ISO 14001 or EMAS-certified.

Mapei invests 12% in its company's total work-force and 5% of its turnover in Research & Development; in particular, 70% of its R&D efforts are directed to develop eco-sustainable and environmentally friendly products, which give important contribution to all major green rating systems for eco-sustainable buildings such as LEED and BREEAM.



LEED V4 is the latest version of Leadership in Environmental and Energy Design, an American protocol that enables buildings to be certified as eco-sustainable according to parameters

and credits described in the most widely adopted green building criteria in the world. Issued by the GBC US, it is mandatory for all LEED projects registered after October 2016.

Numerous changes have been made to the previous version: Mapei products play a part in obtaining important credits thanks to their EPD's (type III environmental declarations) and their products with very low emission of VOC.

BREEAM[®]

Launched in the UK in 1990, **BREEAM** (BRE Environmental Assessment Method) is a protocol for sustainable building practices adopted mainly in the United Kingdom and in Scandinavian countries with the version BREEAM NOR.

By adopting this protocol, thanks to their EPD's and very low emission of VOC, Mapei products help towards obtaining relative credits.

Furthermore, Mapei has developed a sales and technical service network with offices all over the world and offers an efficient Technical Assistance Service that is valued by architects, engineers, contractors and owners.

The goal of the study is to provide necessary data and documentation to produce an EPD according to the requirements of PCR Environdec (version 1.1, 2021-02-05) under EN 15804:2012+A2:2019 and to have more comprehension about the environmental impacts related to **Mape-Antique Rinzafo**, **Mape-Antique MC**, **Mape-Antique MC Macchina**, **Mape-Antique NHL ECO Rinzafo** and **Mape-Antique NHL ECO Risana**, manufactured in Mapei S.p.A. located in Latina

(Italy), in year 2020, including packaging of the finished products. Target audiences of the study are customers and other parties with an interest in the environmental impacts of **Mape-Antique Rinzafo**, **Mape-Antique MC**, **Mape-Antique MC Macchina**, **Mape-Antique NHL ECO Rinzafo** and **Mape-Antique NHL ECO Risana**. This analysis shall not support comparative assertions intended to be disclosed to the public.

Figure 1: Church of San Paolo Eremita, Brindisi (Italy)



2. PRODUCT DESCRIPTION

Mape-Antique Rinzafo is a pre-blended, cement-free scratch-coat mortar in powder form made from lime and Eco-Pozzolan.

Mape-Antique MC and **Mape-Antique MC Macchina** are pre-blended, cement-free, powdered mortar for macro-porous, de-humidifying render based on lime and Eco-Pozzolan, with very low emission of volatile organic compounds (EMICODE EC1^{PLUS}).

Mape-Antique NHL ECO Rinzafo is a cement-free, ready-mixed scratch-coat mortar in powder form made from natural hydraulic lime (NHL) and Eco-Pozzolan, with very low emission of volatile organic compounds (EMICODE EC1^{PLUS}).

Mape-Antique NHL ECO Risana is a cement-free, ready-mixed mortar in powder form for macro-porous, de-humidifying render made from natural hydraulic lime (NHL), with very low emission of volatile organic compounds (EMICODE EC1^{PLUS}).

All products are classified according to EN 998-1 Standards: “General purpose mortar for internal/external render”.

Mape-Antique MC, **Mape-Antique MC Macchina**, and **Mape-Antique NHL ECO Risana** are available in 25 kg multiply bags.

Mape-Antique Rinzafo and **Mape-Antique NHL ECO Rinzafo** are available in 20 kg multiply bags.

For more information about the products, see the TDS (Technical Data Sheet).

3. CONTENT DECLARATION

The main components and ancillary materials of the products included in this EPD are the following:

Table 1: Composition

Materials	Percentage (%) by mass
Inorganic binders	< 60% (recycled pre-consumer: < 50%)
Organic binder	< 3%
Fillers	< 75%
Additives	< 2%
Packaging	Percentage (%) by mass
Multiply bag (CA/PE/CA)*	< 0,5%
Wrapping material (PE)	< 0,1%
Pallet (WOOD)	< 1%

*Multiply bags are recyclable up to 90% (ATICELCA class A) according to UNI 11743.

The products contain in a concentration higher than 0,1% (by unit weight) neither carcinogenic substances nor substances of very high concern (SVHC) on the REACH Candidate List published by the European Chemicals Agency.

4. DECLARED UNIT AND REFERENCE SERVICE LIFE

The declared unit is 1 kg of finished product with packaging.

Due to the selected system boundary, the reference service life of the products is not specified.



Figure 2: Water Central Museum, Milan (Italy)



5. SYSTEM BOUNDARIES AND ADDITIONAL TECHNICAL INFORMATION

The approach is “cradle to gate with modules C1–C4 and module D” (A1–A3 + C + D);

- A1, A2, A3 (Product stages): extraction and processing of raw materials and packaging (A1), transportation up to the factory gate (A2), manufacturing of the finished product (A3);
- C1, C2, C3, C4 (End of Life stages): with a collection rate of 100% as C&D waste, the transports are carried out by lorry (EURO 5) over 100 km (C2). A recycling ratio (C3) of 70% is considered in accordance with the European Directive 2008/98/CE. The remaining 30% is landfilled (C4);
- D (Resource recovery stage): contains credits from the recycling of the product in module C3. The product is collected and recycled for use in substitution of virgin raw aggregates.

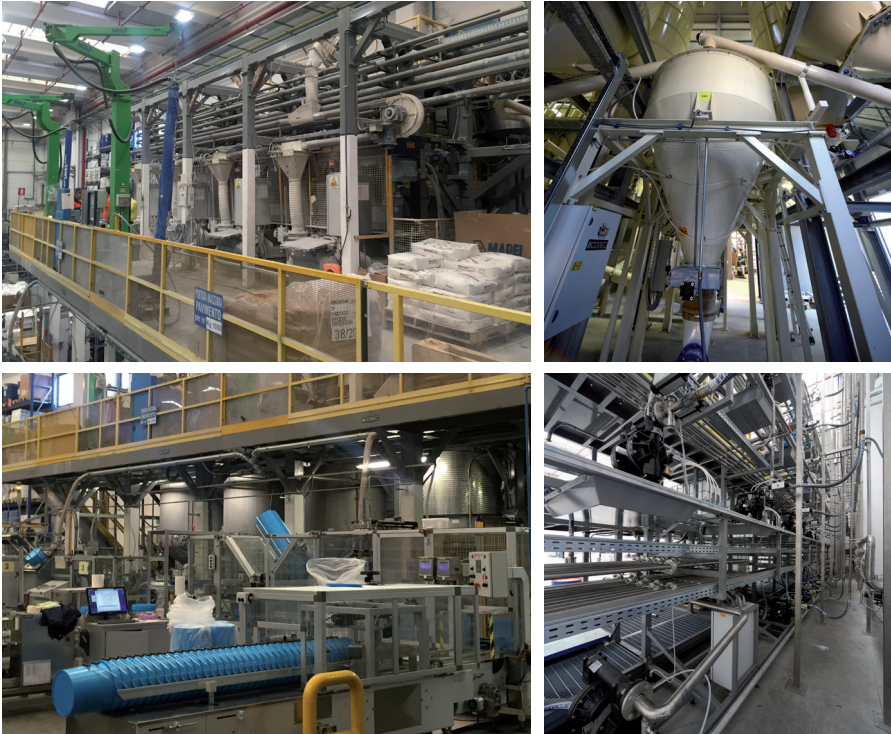
Table 2: System boundaries

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X
Geography	EU, IT	EU, IT	IT	-	-	-	-	-	-	-	-	-	EU, IT	EU	EU	EU	EU
Specific data	> 90%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	Not-relevant					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	Not-relevant					-	-	-	-	-	-	-	-	-	-	-	-

A brief description of production process is the following:

The production process starts from raw materials, that are purchased from external and intercompany suppliers and stored in the plant. Bulk raw materials are stored in specific silos and added automatically in the production mixer, according to the formula of the product. Other raw materials, supplied in bags or big-bags, are stored in the warehouse and added automatically or manually in the mixer. The production is a discontinuous process, in which all the components are mechanically mixed in batches. The semi-finished product is then packaged in bags, put on wooden pallets, covered by stretched hoods and stored in the Finished Products' warehouse. The quality of final products is controlled before the sale.

Figure 3: Production process details



6. CUT-OFF RULES AND ALLOCATION

Criteria for the exclusion of inputs and outputs (cut-off rules) in the LCA, information modules and any additional information are intended to support an efficient calculation procedure. They are not applied in order to hide data.

The following procedure is applied for the exclusion of inputs and outputs:

- All inputs and outputs to a unit process, for which data are available, are included in the calculation
- Cut-off criteria, where applied, are described in Table 3

Input flows are covered for the whole formula.

Table 3: Composition

Process excluded from study	Cut-off criteria	Quantified contribution from process
A3: production (auxiliary materials)	Less than 10 ⁻⁵ kg/kg of finished product	Sensitivity study demonstrates a relative contribution lower than 0,5%
A3: particle emission	Less than 10 ⁻⁵ kg/kg of finished product	Sensitivity study demonstrates a relative contribution lower than 0,5%

For the allocation procedure and principles, consider the table 4.

Table 4: Allocation procedure and principles

Module	Allocation Principle
A1	All data are referred to 1 kg of product A1: electricity is allocated to the whole plant production
A3	All data are referred to 1 kg of packaged product A3-wastes: all data are allocated to the whole plant production

7. ENVIRONMENTAL PERFORMANCE AND INTERPRETATION



GWP

Climate change

GWPTotal - Global Warming Potential refers to the emission/presence of GHGs (greenhouse gases) in the atmosphere (mainly CO₂, N₂O, CH₄) which contribute to the increase in the temperature of the planet.

GWP-total considers:

- GWP-fossil
- GWP-biogenic
- GWP-luluc (land use and land use change)



ODP

Ozone Depletion

Ozone Depletion Potential refers to the degradation of the stratospheric layer of the ozone involved in blocking the UV component of sunrays. Depletion is due to particularly reactive components that originate from chlorofluorocarbon (CFC) or chlorofluoromethane (CFM).



AP

Acidification

Acidification Potential refers to the emission of specific acidifying substances (i.e. NO_x, SO_x) in the air. These substances decrease the pH of the rainfall with predictable damages to the ecosystem.



EP

Eutrophication

Eutrophication Potential refers to the nutrient enrichment, which determines unbalance in ecosystems and causes the death of the fauna and decreased biodiversity in flora.

It considers:

- EP-freshwater: aquatic freshwater
- EP-marine: aquatic marine
- EP-terrestrial



POCP

Photochemical ozone formation

The Photochemical Ozone Creation Potential is the ozone formation in low atmosphere. This is quite common in the cities where a great amount of pollutants (like VOC and NO_x) are emitted every day (industrial emissions and vehicles). It is mainly diffused during the summertime.



**ADP
minerals&metals**

Depletion of abiotic resources – minerals and metals

Abiotic Depletion Potential elements refers to the depletion of the mineral resources.



ADP - fossil

Depletion of abiotic resources – fossil fuel

Abiotic Depletion Potential fossil fuel refers to the depletion of the fossil fuel resources.



WDP

Water use

It expresses the potential deprivation of water, that consists in not having the water needs satisfied.



PM

Particulate Matter emissions

Impact category that accounts for the adverse health effects on human health caused by emissions of Particulate Matter (PM).



IRP

Ionizing radiation, human health

Impact category that accounts for the adverse health effects on human health caused by radioactive releases.



ETP-fw

Eco-toxicity (freshwater)

Impact category that addresses the toxic impacts on a freshwater ecosystem, which damage individual species and change the structure and function of the ecosystem. Ecotoxicity is a result of a variety of different toxicological mechanisms caused by the release of substances with a direct effect on the health of the ecosystem.



HTP-c

Human toxicity, cancer effects

Impact category that accounts for the adverse health effects on human beings caused by the intake of toxic substances through inhalation of air, food/water ingestion, penetration through the skin insofar as they are related to cancer.



HTP-nc

Human toxicity, non-cancer effects

Impact category that accounts for the adverse health effects on human beings caused by the intake of toxic substances through inhalation of air, food/water ingestion, penetration through the skin insofar as they are related to non-cancer effects that are not caused by particulate matter/respiratory inorganics or ionising radiation.



SQP

Land use related impacts / Soil quality

Impact category that accounts for the effect of land use on soil quality, which is the capacity of a living soil to function, to sustain plant and animal productivity, maintain or enhance water and air quality, and promote plant and animal health.

The following tables show the environmental impacts for the products considered according to the requirements of EN15804:2012+A2:2019. The results are referred to the declared unit (see § 4). The additional environmental indicators are not declared.

MAPE-ANTIQUE RINZAFFO

(1 kg product + packaging)

Table 5: MAPE-ANTIQUE RINZAFFO: Potential environmental impact – mandatory indicators according to EN 15804 referred to 1 kg of product with packaging

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP_{TOTAL}	(kg CO ₂ eq.)	2,00E-01	2,17E-03	1,21E-02	1,84E-03	4,42E-03	-1,39E-02
GWP _{FOSSIL}	(kg CO ₂ eq.)	2,16E-01	2,14E-03	1,20E-02	1,82E-03	4,54E-03	-1,38E-02
GWP _{BIOGENIC}	(kg CO ₂ eq.)	-1,61E-02	2,92E-05	-1,42E-05	5,95E-07	-1,32E-04	-4,26E-05
GWP _{LULUC}	(kg CO ₂ eq.)	4,07E-04	5,83E-06	9,77E-05	1,26E-05	1,33E-05	-1,57E-05
ODP	(kg CFC 11 eq.)	3,45E-09	8,38E-17	2,36E-18	4,73E-18	1,76E-17	-6,02E-17
AP	(mol H ⁺ eq.)	5,31E-04	2,82E-06	3,93E-05	1,76E-05	3,23E-05	-2,79E-05
EP _{FRESHWATER}	(kg P eq.)	1,66E-05	9,68E-09	3,55E-08	5,20E-09	7,62E-09	-1,31E-08
EP _{FRESHWATER}	(kg (PO ₄) ³⁻ eq.)	5,09E-05	2,97E-08	1,09E-07	1,60E-08	2,34E-08	-4,01E-08
EP _{MARINE}	(kg N eq.)	1,15E-04	8,98E-07	1,80E-05	8,65E-06	8,39E-06	-1,29E-05
EP _{TERRESTRIAL}	(mol N eq.)	1,24E-03	9,47E-06	2,01E-04	9,51E-05	9,22E-05	-1,42E-04
POCP	(kg NMVOC eq.)	3,42E-04	2,42E-06	3,54E-05	2,52E-05	2,54E-05	-3,69E-05
ADP _{MINERALS&METALS}	(kg Sb eq.)	4,47E-07	9,55E-10	1,06E-09	2,00E-09	4,28E-10	-1,68E-09
ADP _{FOSSIL}	(MJ)	2,77E+00	3,08E-02	1,59E-01	3,56E-02	6,02E-02	-2,29E-01
WDP	(m ³ world eq.)	4,23E-02	6,51E-04	1,11E-04	3,41E-04	4,87E-04	-1,18E-02

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; **EP_{FRESHWATER}**: Eutrophication Potential, freshwater; **EP_{MARINE}**: Eutrophication Potential, marine; **EP_{TERRESTRIAL}**: Eutrophication Potential, terrestrial; **POCP**: Formation potential of tropospheric ozone; **ADP_{MINERALS&METALS}**: Abiotic Depletion Potential for non-fossil resources; **ADP_{FOSSIL}**: Abiotic Depletion Potential for fossil resources; **WDP**: Water Deprivation Potential.

Table 6: MAPE-ANTIQUE RINZAFFO: Potential environmental impact – additional mandatory and voluntary indicators referred to 1 kg of product with packaging

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG	(kg CO ₂ eq.)	2,13E-01	2,11E-03	1,19E-02	1,79E-03	4,47E-03	-1,37E-02

GWP-GHG: The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Table 7: MAPE-ANTIQUE RINZAFFO: Use of resources referred to 1 kg of product with packaging

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	2,50E-01	2,18E-02	9,16E-03	2,62E-03	8,11E-03	-1,68E-02
PERM	MJ	2,51E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	5,01E-01	2,18E-02	9,16E-03	2,62E-03	8,11E-03	-1,68E-02
PENRE	MJ	2,72E+00	3,08E-02	1,60E-01	3,56E-02	6,02E-02	-2,29E-01
PENRM	MJ	5,38E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	2,77E+00	3,08E-02	1,60E-01	3,56E-02	6,02E-02	-2,29E-01
SM*	kg	4,58E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	1,06E-03	1,76E-05	1,05E-05	9,81E-06	1,49E-05	-2,83E-04

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 (primary energy and primary energy resources used as raw materials); **PENRE:** Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM:** Use of non-renewable primary energy resources used as raw materials; **PENRT:** Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials); **SM:** Use of secondary material; **RSF:** Use of renewable secondary fuels; **NRSF:** Use of non-renewable secondary fuels; **FW:** Net use of fresh water.

* only referred to 1kg of product (without packaging)

Table 8: MAPE-ANTIQUE RINZAFFO: Waste production and output flows referred to 1 kg of product with packaging

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	2,25E-05	1,44E-11	8,42E-12	1,99E-12	6,39E-12	-6,08E-11
NHWD	kg	3,25E-03	3,26E-05	2,51E-05	9,54E-06	3,00E-01	-1,38E-02
RWD	kg	2,37E-05	1,10E-06	2,90E-07	4,60E-07	6,32E-07	-2,30E-06
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	1,29E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

HWD: Hazardous waste disposed; **NHWD:** Non-Hazardous waste disposed; **RWD:** Radioactive waste disposed

Table 9: MAPE-ANTIQUE RINZAFFO: Information on biogenic carbon content at the factory gate referred to 1 kg of product with packaging

Biogenic Carbon Content	Unit	Quantity
Biogenic carbon content in product	kg C	0,00E+00
Biogenic carbon content in packaging	kg C	5,75E-03

MAPE-ANTIQUE MC

(1 kg product + packaging)

Table 10: MAPE-ANTIQUE MC: Potential environmental impact – mandatory indicators according to EN 15804 referred to 1 kg of product with packaging

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP_{TOTAL}	(kg CO ₂ eq.)	1,03E-01	2,17E-03	1,21E-02	1,84E-03	4,42E-03	-1,39E-02
GWP _{FOSSIL}	(kg CO ₂ eq.)	1,16E-01	2,14E-03	1,20E-02	1,82E-03	4,54E-03	-1,38E-02
GWP _{BIOGENIC}	(kg CO ₂ eq.)	-1,42E-02	2,92E-05	-1,42E-05	5,95E-07	-1,32E-04	-4,26E-05
GWP _{LULUC}	(kg CO ₂ eq.)	2,83E-04	5,83E-06	9,77E-05	1,26E-05	1,33E-05	-1,57E-05
ODP	(kg CFC 11 eq.)	2,07E-09	8,38E-17	2,36E-18	4,73E-18	1,76E-17	-6,02E-17
AP	(mol H ⁺ eq.)	3,17E-04	2,82E-06	3,93E-05	1,76E-05	3,23E-05	-2,79E-05
EP _{FRESHWATER}	(kg P eq.)	9,30E-06	9,68E-09	3,55E-08	5,20E-09	7,62E-09	-1,31E-08
EP _{FRESHWATER}	(kg (PO ₄) ³⁻ eq.)	2,85E-05	2,97E-08	1,09E-07	1,60E-08	2,34E-08	-4,01E-08
EP _{MARINE}	(kg N eq.)	8,02E-05	8,98E-07	1,80E-05	8,65E-06	8,39E-06	-1,29E-05
EP _{TERRESTRIAL}	(mol N eq.)	8,63E-04	9,47E-06	2,01E-04	9,51E-05	9,22E-05	-1,42E-04
POCP	(kg NMVOC eq.)	2,07E-04	2,42E-06	3,54E-05	2,52E-05	2,54E-05	-3,69E-05
ADP _{MINERALS&METALS}	(kg Sb eq.)	2,50E-07	9,55E-10	1,06E-09	2,00E-09	4,28E-10	-1,68E-09
ADP _{FOSSIL}	(MJ)	1,30E+00	3,08E-02	1,59E-01	3,56E-02	6,02E-02	-2,29E-01
WDP	(m ³ world eq.)	1,57E-02	6,51E-04	1,11E-04	3,41E-04	4,87E-04	-1,18E-02

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; **EP_{FRESHWATER}**: Eutrophication Potential, freshwater; **EP_{MARINE}**: Eutrophication Potential, marine; **EP_{TERRESTRIAL}**: Eutrophication Potential, terrestrial; **POCP**: Formation potential of tropospheric ozone; **ADP_{MINERALS&METALS}**: Abiotic Depletion Potential for non-fossil resources; **ADP_{FOSSIL}**: Abiotic Depletion Potential for fossil resources; **WDP**: Water Deprivation Potential.

Table 11: MAPE-ANTIQUE MC: Potential environmental impact – additional mandatory and voluntary indicators referred to 1 kg of product with packaging

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG	(kg CO ₂ eq.)	1,15E-01	2,11E-03	1,19E-02	1,79E-03	4,47E-03	-1,37E-02

GWP-GHG: The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Table 12: MAPE-ANTIQUE MC: Use of resources referred to 1 kg of product with packaging

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	1,88E-01	2,18E-02	9,16E-03	2,62E-03	8,11E-03	-1,68E-02
PERM	MJ	2,15E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	4,03E-01	2,18E-02	9,16E-03	2,62E-03	8,11E-03	-1,68E-02
PENRE	MJ	1,26E+00	3,08E-02	1,60E-01	3,56E-02	6,02E-02	-2,29E-01
PENRM	MJ	4,30E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,30E+00	3,08E-02	1,60E-01	3,56E-02	6,02E-02	-2,29E-01
SM*	kg	2,35E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	1,83E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	3,60E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	4,26E-04	1,76E-05	1,05E-05	9,81E-06	1,49E-05	-2,83E-04

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 (primary energy and primary energy resources used as raw materials); **PENRE:** Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM:** Use of non-renewable primary energy resources used as raw materials; **PENRT:** Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials); **SM:** Use of secondary material; **RSF:** Use of renewable secondary fuels; **NRSF:** Use of non-renewable secondary fuels; **FW:** Net use of fresh water.

*only referred to 1kg of product (without packaging)

Table 13: MAPE-ANTIQUE MC: Waste production and output flows referred to 1 kg of product with packaging

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	2,54E-06	1,44E-11	8,42E-12	1,99E-12	6,39E-12	-6,08E-11
NHWD	kg	2,68E-03	3,26E-05	2,51E-05	9,54E-06	3,00E-01	-1,38E-02
RWD	kg	1,49E-05	1,10E-06	2,90E-07	4,60E-07	6,32E-07	-2,30E-06
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	1,29E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

HWD: Hazardous waste disposed; **NHWD:** Non-Hazardous waste disposed; **RWD:** Radioactive waste disposed

Table 14: MAPE-ANTIQUE MC: Information on biogenic carbon content at the factory gate referred to 1 kg of product with packaging

Biogenic Carbon Content	Unit	Quantity
Biogenic carbon content in product	kg C	0,00E+00
Biogenic carbon content in packaging	kg C	4,92E-03

MAPE-ANTIQUE MC MACCHINA

(1 kg product + packaging)

Table 15: MAPE-ANTIQUE MC MACCHINA: Potential environmental impact – mandatory indicators according to EN 15804 referred to 1 kg of product with packaging

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP_{TOTAL}	(kg CO ₂ eq.)	1,03E-01	2,17E-03	1,21E-02	1,84E-03	4,42E-03	-1,39E-02
GWP _{FOSSIL}	(kg CO ₂ eq.)	1,17E-01	2,14E-03	1,20E-02	1,82E-03	4,54E-03	-1,38E-02
GWP _{BIOGENIC}	(kg CO ₂ eq.)	-1,45E-02	2,92E-05	-1,42E-05	5,95E-07	-1,32E-04	-4,26E-05
GWP _{LULUC}	(kg CO ₂ eq.)	2,87E-04	5,83E-06	9,77E-05	1,26E-05	1,33E-05	-1,57E-05
ODP	(kg CFC 11 eq.)	2,11E-09	8,38E-17	2,36E-18	4,73E-18	1,76E-17	-6,02E-17
AP	(mol H ⁺ eq.)	3,24E-04	2,82E-06	3,93E-05	1,76E-05	3,23E-05	-2,79E-05
EP _{FRESHWATER}	(kg P eq.)	9,52E-06	9,68E-09	3,55E-08	5,20E-09	7,62E-09	-1,31E-08
EP _{FRESHWATER}	(kg (PO ₄) ³⁻ eq.)	2,92E-05	2,97E-08	1,09E-07	1,60E-08	2,34E-08	-4,01E-08
EP _{MARINE}	(kg N eq.)	8,45E-05	8,98E-07	1,80E-05	8,65E-06	8,39E-06	-1,29E-05
EP _{TERRESTRIAL}	(mol N eq.)	9,00E-04	9,47E-06	2,01E-04	9,51E-05	9,22E-05	-1,42E-04
POCP	(kg NMVOC eq.)	2,12E-04	2,42E-06	3,54E-05	2,52E-05	2,54E-05	-3,69E-05
ADP _{MINERALS&METALS}	(kg Sb eq.)	2,57E-07	9,55E-10	1,06E-09	2,00E-09	4,28E-10	-1,68E-09
ADP _{FOSSIL}	(MJ)	1,31E+00	3,08E-02	1,59E-01	3,56E-02	6,02E-02	-2,29E-01
WDP	(m ³ world eq.)	1,89E-02	6,51E-04	1,11E-04	3,41E-04	4,87E-04	-1,18E-02

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; **EP_{FRESHWATER}**: Eutrophication Potential, freshwater; **EP_{MARINE}**: Eutrophication Potential, marine; **EP_{TERRESTRIAL}**: Eutrophication Potential, terrestrial; **POCP**: Formation potential of tropospheric ozone; **ADP_{MINERALS&METALS}**: Abiotic Depletion Potential for non-fossil resources; **ADP_{FOSSIL}**: Abiotic Depletion Potential for fossil resources; **WDP**: Water Deprivation Potential.

Table 16: MAPE-ANTIQUE MC MACCHINA: Potential environmental impact – additional mandatory and voluntary indicators referred to 1 kg of product with packaging

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG	(kg CO ₂ eq.)	1,16E-01	2,11E-03	1,19E-02	1,79E-03	4,47E-03	-1,37E-02

GWP-GHG: The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Table 17: MAPE-ANTIQUA MC MACCHINA: Use of resources referred to 1 kg of product with packaging

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	1,97E-01	2,18E-02	9,16E-03	2,62E-03	8,11E-03	-1,68E-02
PERM	MJ	2,15E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	4,12E-01	2,18E-02	9,16E-03	2,62E-03	8,11E-03	-1,68E-02
PENRE	MJ	1,27E+00	3,08E-02	1,60E-01	3,56E-02	6,02E-02	-2,29E-01
PENRM	MJ	4,30E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,32E+00	3,08E-02	1,60E-01	3,56E-02	6,02E-02	-2,29E-01
SM*	kg	2,35E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	1,83E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	3,60E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m ³	5,00E-04	1,76E-05	1,05E-05	9,81E-06	1,49E-05	-2,83E-04

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 (primary energy and primary energy resources used as raw materials); **PENRE:** Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM:** Use of non-renewable primary energy resources used as raw materials; **PENRT:** Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials); **SM:** Use of secondary material; **RSF:** Use of renewable secondary fuels; **NRSF:** Use of non-renewable secondary fuels; **FW:** Net use of fresh water.

* only referred to 1kg of product (without packaging)

Table 18: MAPE-ANTIQUA MC MACCHINA: Waste production and output flows referred to 1 kg of product with packaging

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	6,69E-06	1,44E-11	8,42E-12	1,99E-12	6,39E-12	-6,08E-11
NHWD	kg	2,70E-03	3,26E-05	2,51E-05	9,54E-06	3,00E-01	-1,38E-02
RWD	kg	1,65E-05	1,10E-06	2,90E-07	4,60E-07	6,32E-07	-2,30E-06
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	1,29E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

HWD: Hazardous waste disposed; **NHWD:** Non-Hazardous waste disposed; **RWD:** Radioactive waste disposed

Table 19: MAPE-ANTIQUA MC MACCHINA: Information on biogenic carbon content at the factory gate referred to 1 kg of product with packaging

Biogenic Carbon Content	Unit	Quantity
Biogenic carbon content in product	kg C	0,00E+00
Biogenic carbon content in packaging	kg C	4,92E-03

MAPE-ANTIQUE NHL ECO RINZAFFO

(1 kg product + packaging)

Table 20: MAPE-ANTIQUE NHL ECO RINZAFFO: Potential environmental impact – mandatory indicators according to EN 15804 referred to 1 kg of product with packaging

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP_{TOTAL}	(kg CO ₂ eq.)	2,14E-01	2,17E-03	1,21E-02	1,84E-03	4,42E-03	-1,39E-02
GWP _{FOSSIL}	(kg CO ₂ eq.)	2,30E-01	2,14E-03	1,20E-02	1,82E-03	4,54E-03	-1,38E-02
GWP _{BIOGENIC}	(kg CO ₂ eq.)	-1,67E-02	2,92E-05	-1,42E-05	5,95E-07	-1,32E-04	-4,26E-05
GWP _{LULUC}	(kg CO ₂ eq.)	3,29E-04	5,83E-06	9,77E-05	1,26E-05	1,33E-05	-1,57E-05
ODP	(kg CFC 11 eq.)	9,02E-10	8,38E-17	2,36E-18	4,73E-18	1,76E-17	-6,02E-17
AP	(mol H ⁺ eq.)	3,47E-04	2,82E-06	3,93E-05	1,76E-05	3,23E-05	-2,79E-05
EP _{FRESHWATER}	(kg P eq.)	4,57E-06	9,68E-09	3,55E-08	5,20E-09	7,62E-09	-1,31E-08
EP _{FRESHWATER}	(kg (PO ₄) ³⁻ eq.)	1,40E-05	2,97E-08	1,09E-07	1,60E-08	2,34E-08	-4,01E-08
EP _{MARINE}	(kg N eq.)	1,06E-04	8,98E-07	1,80E-05	8,65E-06	8,39E-06	-1,29E-05
EP _{TERRESTRIAL}	(mol N eq.)	1,16E-03	9,47E-06	2,01E-04	9,51E-05	9,22E-05	-1,42E-04
POCP	(kg NMVOC eq.)	3,05E-04	2,42E-06	3,54E-05	2,52E-05	2,54E-05	-3,69E-05
ADP _{MINERALS&METALS}	(kg Sb eq.)	1,29E-07	9,55E-10	1,06E-09	2,00E-09	4,28E-10	-1,68E-09
ADP _{FOSSIL}	(MJ)	2,47E+00	3,08E-02	1,59E-01	3,56E-02	6,02E-02	-2,29E-01
WDP	(m ³ world eq.)	2,84E-02	6,51E-04	1,11E-04	3,41E-04	4,87E-04	-1,18E-02

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; **EP_{FRESHWATER}**: Eutrophication Potential, freshwater; **EP_{MARINE}**: Eutrophication Potential, marine; **EP_{TERRESTRIAL}**: Eutrophication Potential, terrestrial; **POCP**: Formation potential of tropospheric ozone; **ADP_{MINERALS&METALS}**: Abiotic Depletion Potential for non-fossil resources; **ADP_{FOSSIL}**: Abiotic Depletion Potential for fossil resources; **WDP**: Water Deprivation Potential.

Table 21: MAPE-ANTIQUE NHL ECO RINZAFFO: Potential environmental impact – additional mandatory and voluntary indicators referred to 1 kg of product with packaging

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG	(kg CO ₂ eq.)	2,27E-01	2,11E-03	1,19E-02	1,79E-03	4,47E-03	-1,37E-02

GWP-GHG: The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Table 22: MAPE-ANTIQUÉ NHL ECO RINZAFFO: Use of resources referred to 1 kg of product with packaging

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	2,25E-01	2,18E-02	9,16E-03	2,62E-03	8,11E-03	-1,68E-02
PERM	MJ	2,51E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	4,76E-01	2,18E-02	9,16E-03	2,62E-03	8,11E-03	-1,68E-02
PENRE	MJ	2,42E+00	3,08E-02	1,60E-01	3,56E-02	6,02E-02	-2,29E-01
PENRM	MJ	5,38E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	2,48E+00	3,08E-02	1,60E-01	3,56E-02	6,02E-02	-2,29E-01
SM*	kg	1,20E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m³	7,56E-04	1,76E-05	1,05E-05	9,81E-06	1,49E-05	-2,83E-04

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 (primary energy and primary energy resources used as raw materials); **PENRE:** Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM:** Use of non-renewable primary energy resources used as raw materials; **PENRT:** Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials); **SM:** Use of secondary material; **RSF:** Use of renewable secondary fuels; **NRSF:** Use of non-renewable secondary fuels; **FW:** Net use of fresh water.

* only referred to 1kg of product (without packaging)

Table 23: MAPE-ANTIQUÉ NHL ECO RINZAFFO: Waste production and output flows referred to 1 kg of product with packaging

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	2,25E-05	1,44E-11	8,42E-12	1,99E-12	6,39E-12	-6,08E-11
NHWD	kg	5,67E-03	3,26E-05	2,51E-05	9,54E-06	3,00E-01	-1,38E-02
RWD	kg	2,67E-05	1,10E-06	2,90E-07	4,60E-07	6,32E-07	-2,30E-06
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	1,29E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

HWD: Hazardous waste disposed; **NHWD:** Non-Hazardous waste disposed; **RWD:** Radioactive waste disposed

Table 24: MAPE-ANTIQUÉ NHL ECO RINZAFFO: Information on biogenic carbon content at the factory gate referred to 1 kg of product with packaging

Biogenic Carbon Content	Unit	Quantity
Biogenic carbon content in product	kg C	0,00E+00
Biogenic carbon content in packaging	kg C	5,75E-03

MAPE-ANTIQUE NHL ECO RISANA

(1 kg product + packaging)

Table 25: MAPE-ANTIQUE NHL ECO RISANA: Potential environmental impact – mandatory indicators according to EN 15804 referred to 1 kg of product with packaging

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP_{TOTAL}	(kg CO ₂ eq.)	1,46E-01	2,17E-03	1,21E-02	1,84E-03	4,42E-03	-1,39E-02
GWP _{FOSSIL}	(kg CO ₂ eq.)	1,61E-01	2,14E-03	1,20E-02	1,82E-03	4,54E-03	-1,38E-02
GWP _{BIOGENIC}	(kg CO ₂ eq.)	-1,48E-02	2,92E-05	-1,42E-05	5,95E-07	-1,32E-04	-4,26E-05
GWP _{LULUC}	(kg CO ₂ eq.)	2,77E-04	5,83E-06	9,77E-05	1,26E-05	1,33E-05	-1,57E-05
ODP	(kg CFC 11 eq.)	1,43E-09	8,38E-17	2,36E-18	4,73E-18	1,76E-17	-6,02E-17
AP	(mol H ⁺ eq.)	2,73E-04	2,82E-06	3,93E-05	1,76E-05	3,23E-05	-2,79E-05
EP _{FRESHWATER}	(kg P eq.)	6,26E-06	9,68E-09	3,55E-08	5,20E-09	7,62E-09	-1,31E-08
EP _{FRESHWATER}	(kg (PO ₄) ³⁻ eq.)	1,92E-05	2,97E-08	1,09E-07	1,60E-08	2,34E-08	-4,02E-08
EP _{MARINE}	(kg N eq.)	8,76E-05	8,98E-07	1,80E-05	8,65E-06	8,39E-06	-1,29E-05
EP _{TERRESTRIAL}	(mol N eq.)	9,48E-04	9,47E-06	2,01E-04	9,51E-05	9,22E-05	-1,42E-04
POCP	(kg NMVOC eq.)	2,27E-04	2,42E-06	3,54E-05	2,52E-05	2,54E-05	-3,69E-05
ADP _{MINERALS&METALS}	(kg Sb eq.)	1,40E-07	9,55E-10	1,06E-09	2,00E-09	4,28E-10	-1,68E-09
ADP _{FOSSIL}	(MJ)	1,38E+00	3,08E-02	1,59E-01	3,56E-02	6,02E-02	-2,29E-01
WDP	(m ³ world eq.)	1,68E-02	6,51E-04	1,11E-04	3,41E-04	4,87E-04	-1,18E-02

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; **EP_{FRESHWATER}**: Eutrophication Potential, freshwater; **EP_{MARINE}**: Eutrophication Potential, marine; **EP_{TERRESTRIAL}**: Eutrophication Potential, terrestrial; **POCP**: Formation potential of tropospheric ozone; **ADP_{MINERALS&METALS}**: Abiotic Depletion Potential for non-fossil resources; **ADP_{FOSSIL}**: Abiotic Depletion Potential for fossil resources; **WDP**: Water Deprivation Potential.

Table 26: MAPE-ANTIQUE NHL ECO RISANA: Potential environmental impact – additional mandatory and voluntary indicators referred to 1 kg of product with packaging

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG	(kg CO ₂ eq.)	1,59E-01	2,11E-03	1,19E-02	1,79E-03	4,47E-03	-1,37E-02

GWP-GHG: The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

Table 27: MAPE-ANTIQUE NHL ECO RISANA: Use of resources referred to 1 kg of product with packaging

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	2,00E-01	2,18E-02	9,16E-03	2,62E-03	8,11E-03	-1,68E-02
PERM	MJ	2,15E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	4,16E-01	2,18E-02	9,16E-03	2,62E-03	8,11E-03	-1,68E-02
PENRE	MJ	1,33E+00	3,08E-02	1,60E-01	3,56E-02	6,02E-02	-2,29E-01
PENRM	MJ	4,30E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,38E+00	3,08E-02	1,60E-01	3,56E-02	6,02E-02	-2,29E-01
SM*	kg	5,00E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m³	4,66E-04	1,76E-05	1,05E-05	9,81E-06	1,49E-05	-2,84E-04

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 (primary energy and primary energy resources used as raw materials); **PENRE:** Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; **PENRM:** Use of non-renewable primary energy resources used as raw materials; **PENRT:** Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials); **SM:** Use of secondary material; **RSF:** Use of renewable secondary fuels; **NRSF:** Use of non-renewable secondary fuels; **FW:** Net use of fresh water.

* only referred to 1kg of product (without packaging)

Table 28: MAPE-ANTIQUE NHL ECO RISANA: Waste production and output flows referred to 1 kg of product with packaging

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	5,18E-06	1,44E-11	8,42E-12	1,99E-12	6,39E-12	-6,08E-11
NHWD	kg	3,58E-03	3,26E-05	2,51E-05	9,54E-06	3,00E-01	-1,38E-02
RWD	kg	1,73E-05	1,10E-06	2,90E-07	4,60E-07	6,32E-07	-2,30E-06
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	1,29E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

HWD: Hazardous waste disposed; **NHWD:** Non-Hazardous waste disposed; **RWD:** Radioactive waste disposed

Table 29: MAPE-ANTIQUE NHL ECO RISANA: Information on biogenic carbon content at the factory gate referred to 1 kg of product with packaging

Biogenic Carbon Content	Unit	Quantity
Biogenic carbon content in product	kg C	0,00E+00
Biogenic carbon content in packaging	kg C	4,92E-03






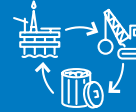

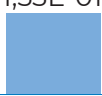







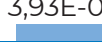












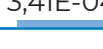
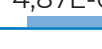
Tables from 5 to 29 show absolute results for all the environmental categories considered.

The main environmental impacts of the products life cycle come from extraction and processing of raw materials (**module A1**). The Product stage (**module A3**) doesn't affect considerably the results.

The specific amounts of **recycled materials** used in the formulation of the Mape-Antiques are shown in the tables above as **SM** (Secondary Material) indicator, and in paragraph 9.2 (Recycled Content).

An overview about the average contribution of the different modules considered in the system boundaries are shown in Table 30.

Table 30: Some environmental impacts of Mape-Antiques (average)

MAPE-ANTIQUES	 A1-A3	 C1	 C2	 C3	 C4	 TOT
CLIMATE CHANGE (total) 	1,53E-01 	2,17E-03 	1,21E-02 	1,84E-03 	4,42E-03 	0,174 kg CO ₂ eq.
ACIDIFICATION 	3,58E-04 	2,82E-06 	3,93E-05 	1,76E-05 	3,23E-05 	4,51E-04 mol H ⁺ eq.
DEPLETION OF ABIOTIC RESOURCES (fossil) 	1,85 	3,08E-02 	1,59E-01 	3,56E-02 	6,02E-02 	2,13 MJ
WATER USE 	2,44E-02 	6,51E-04 	1,11E-04 	3,41E-04 	4,87E-04 	2,60E-02 m ³ world eq.

More details about electrical mix used in this EPD, is shown below:

	Data source	GWP _{TOTAL}	Unit
Residual electricity grid mix (IT) – 2019	AIB	0,531*	kg CO ₂ -eqv/kWh
Electricity from photovoltaic (IT) – 2017	Sphera database	0,0519*	kg CO ₂ -eqv/kWh

*CML2001 – Apr. 2013

8. DATA QUALITY

Table 31: Data quality

Dataset & Geographical reference	Database (source)	Temporary reference
A1; A3		
GGBS (GLO)	ecoinvent 3.7	2020
White PTL cement	EPD-CIS-20150243-CAA1	2015
Fillers (EU)	Sphera Database;	2020
Additives (EU)	Sphera Database; ecoinvent 3.7	2020
Electricity grid mix (IT)	Sphera Database	2019
Electricity from photovoltaic (IT)	Sphera Database	2017
Packaging components (EU)	Sphera Database, PlasticsEurope	2005 – 2020
A2		
Truck, Euro 3, 27t payload (GLO)	Sphera Database	2020
Diesel for transport (EU)	Sphera Database	2017
C1 - C4		
Construction waste treatment (EU)	Sphera Database	2020
Construction waste dumping (EU)	Sphera Database	2020
Electricity grid mix (IT)	Sphera Database	2017
Truck, Euro 4, 9.3t payload (GLO)	Sphera Database	2020
Diesel for transport (EU)	Sphera Database	2017

All data included in table above refer to a period between 2005 and 2020; the most relevant ones are specific from supplier, while the others (i.e. transport and minor contribution dataset), come from European and global databases.

All dataset are not more than 10 years old according to EN 15804 § 6.3.7 “Data quality requirements”. The only exception is represented by one raw material used for one packaging component production, coming from PlasticsEurope database. Primary data concern the

year 2020 and represent the whole annual production.

The Quality level concerning datasets used in the EPD can be considered as “very good” or “good” according to Annex E of the EN 15804 (current version); the only exception is represented by a packaging component which has a quality level classified as “poor” in terms of time representativeness.

9. REQUISITE EVIDENCE

9.1 VOC emissions

Volatile Organic Compounds (VOC) special tests and evidence have been carried out on the two products, according to ISO 16000 parts 3, 6, 9 and 11 and EN 16516.



The products have been evaluated in emission chambers, in order to detect their VOC emissions after 3 and 28 days storage in the ventilated chambers, according to GEV (Gemeinschaft Emissionskontrollierte Verlegewerkstoffe, Klebstoffe und Bauprodukte e.V.) test method.

The following products meet the requirements for the emission class **EMICODE® EC1^{PLUS}**, as “very low VOC emission”, released by GEV:

- **Mape-Antique MC**: license number 3454
- **Mape-Antique MC Macchina**: license number 3888
- **Mape-Antique NHL ECO Risana**: license number 8177
- **Mape-Antique NHL ECO Rinzafo**: license number 8176

Next table describes the limits for the Ecode EC1^{PLUS} class:

Table 32: EC1^{PLUS} VOC limits

	3 days µg/m ³	28 days µg/m ³
TVOC (C6-C16)	≤ 750 µg/m ³	≤ 60 µg/m ³
TSVOC (C16-C22)		≤ 40 µg/m ³
C1A-C1B substances	Total ≤ 10 µg/m ³	Single substance ≤ 1 µg/m ³
Formaldehyde/ acetaldehyde	≤ 50 µg/m ³	
Sum of formaldehyde/ acetaldehyde	≤ 50 ppb	
Sum of non-assessable VOCs		≤ 40
R value		≤ 1

9.2 Recycled Content

Products	Recycled material content (Pre-Consumer)
Mape-Antique Rinzafo	45,8%
Mape-Antique MC	23,4%
Mape-Antique MC Macchina	23,4%
Mape-Antique NHL ECO Rinzafo	12%
Mape-Antique NHL ECO Risana	5%

9.3 End of life / Recyclability

Our Multiply bags are recyclable up to 90% (ATICELCA class A) according to UNI 11743.

The finished products can be recycled at the end of life, after demolition, according to the national laws.

10. DIFFERENCES VERSUS PREVIOUS VERSIONS

In this version, new primary data referred to 2020 has been adopted; more info regarding the end of life stages and module D has been added in chapter 5.

Moreover, additional data quality information has been included in chapter 8. Minor editorial changes have been made in the document.

Figure 4: Museo Nacional de la Musica, Havana (Cuba)



11. VERIFICATION AND REGISTRATION

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

CEN standard EN15804 served as the Core Product Category Rules (PCR)	
PCR:	PCR 2019:14 Construction products (EN 15804:A2), Version 1.11, 2021-02-05, UN CPC code 54
PCR review was conducted by:	The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/ contact.
Independent third-party verification of the declaration and data, according to ISO 14025:2006:	<input checked="" type="checkbox"/> EPD Process Certification <input type="checkbox"/> EPD Verification
Third party verifier:	Certiquality S.r.l. Number of accreditation: 003H rev15
Accredited or approved by:	Accredia
Procedure for follow-up of data during EPD validity involves third-party verifier	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

12. REFERENCES

- EN 15804: SUSTAINABILITY OF CONSTRUCTION WORKS - ENVIRONMENTAL PRODUCT DECLARATIONS - CORE RULES FOR THE PRODUCT CATEGORY OF CONSTRUCTION PRODUCTS
- EN 998-1:2016 "SPECIFICATION FOR MORTAR FOR MASONRY - PART 1: RENDERING AND PLASTERING MORTAR"
- EUROPEAN DIRECTIVE 2008/98/CE
- EUROPEAN RESIDUAL MIXES VERSION 1.1, 2020-09-08 (AIB: ASSOCIATION OF ISSUING BODIES)
- GENERALPROGRAMMEINSTRUCTIONSOFTHEINTERNATIONAL EPD® SYSTEM. VERSION 3.01
- HBEFA - HANDBOOK EMISSION FACTORS FOR ROAD TRANSPORT
- ISO 14025 ENVIRONMENTAL LABELS AND DECLARATIONS - TYPE III ENVIRONMENTAL DECLARATIONS - PRINCIPLES AND PROCEDURES
- ISO 14044 ENVIRONMENTAL MANAGEMENT – LIFE CYCLE ASSESSMENT – REQUIREMENTS AND GUIDELINES
- PCR 2019:14 CONSTRUCTION PRODUCTS (EN 15804: A2), UN CPC CODE 54; VERSION 1.11
- UNI 11743:2019 CARTA E CARTONE - DETERMINAZIONE DEI PARAMETRI DI RICICLABILITÀ DI MATERIALI E PRODOTTI A PREVALENZA CELLULOSICA

CONTACT INFORMATION

EPD owner:



Mapei SpA

mapei.it

LCA author:



Mapei SpA

mapei.it;
Environmental Sustainability Office

Programme operator:



EPD International AB

Address: EPD International AB
Box 210 60
SE-100 31 Stockholm
Sweden

environdec.com
info@environdec.com

HEAD OFFICE

MAPEI SpA

Via Cafiero, 22 - 20158 Milan

Tel. +39-02-37673.1

mapei.com

mapei@mapei.it

