

ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

SILANCOLOR TONACHINO

EPD INTERNATIONAL EPD SYSTEM

ECO PLATFORM EPD VERIFIED

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:	Programme operator:	EPD registration number:	Publication date:	Valid until:	Geographical scope:
The International EPD® System; www.environdec.com	**EPD International AB**	**EPD-IES-0001014**	**2025-04-18**	**2030-04-17**	**Europe**

MAPEI

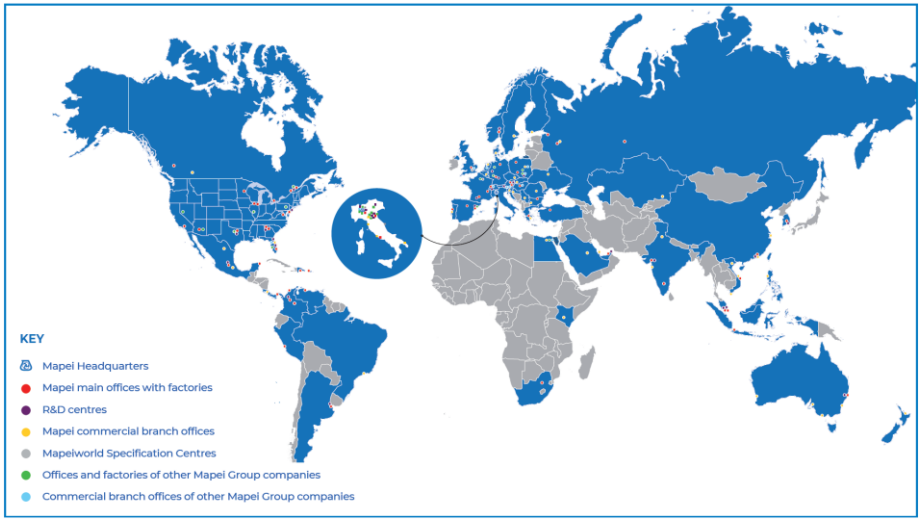
1 COMPANY DESCRIPTION / GOAL & SCOPE

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 100 subsidiaries in the Mapei Group, with a total of 93 production facilities located around the world in 36 different countries and in 5 different continents. Mapei also has 32 central laboratories. Most locations are ISO 9001 and ISO 14001 certified.

Mapei invests 12% in its company's total workforce 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. 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 1.3.4, 2024-04-30) under EN 15804:2012+A2:2019/AC:2021 and to have more comprehension about the environmental impacts related to **Silancolor Tonachino** manufactured in Mapei SpA located in Robbiano di Mediglia (Italy), including packaging of the finished products.

Target audiences of the study are customers and other parties with an interest in the environmental impacts of **Silancolor Tonachino**. This analysis shall not support comparative assertions intended to be disclosed to the public.



2 PRODUCT DESCRIPTION

Silancolor Tonachino is a fibre-reinforced silicone resin-based plaster that has the advantages of both mineral-based coats and synthetic based coats (uniform colour tone, excellent adhesion on existing paints that are well bonded to the substrate and a wide range of colours). Thanks to its special formula, Silancolor Tonachino makes the substrate very permeable to water vapour and considerably water repellent. Unlike normal synthetic coatings, Silancolor Tonachino does not create a film that is waterproof to water vapour because it creates a porous film and, at the same time, the use of special silicone resins does not let liquid water penetrate, ensuring the render remains dry.

Silancolor Tonachino is available in 25 kg plastic drums.

UN CPC code: 3511 - Paints and varnishes and related products.

For more information see the TDS (Technical Data Sheet) on Mapei SpA website (www.mapei.com).

3 CONTENT DECLARATION

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

Table 1: Composition referred to 1 kg of product packaged in 25 kg plastic drums.

Materials	Percentage (%) by mass	Post-consumer recycled material weight-% of product	Biogenic Material, weight-% of product	Biogenic Material, kgC/product
Polymeric dispersions	< 20%	0	0	0
Fillers	< 70% (8% recycled pre-consumer)	0	0	0
Additives	< 4%	0	0	0
Pigments	< 3%	0	0	0
Water	< 15%	0	0	0
Packaging Materials	**Weight-% (versus the product)**		**Weight biogenic carbon, kg C/kg**	
LDPE	0,00056		0	
PP	0,0289		0	
Wood	0,02		0,0086	

The product does not contain a concentration higher than 0,1% (by unit weight) of either carcinogenic substances or 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 product plus its related packaging.

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

5 SYSTEM BOUNDARIES AND ADDITIONAL TECHNICAL INFORMATION

The approach is “cradle to grave” (A1–A3) with modules C1-C4 and module D and optional modules (A1-A3 + A4-A5 +C + D):

- A1, A2, A3 (Product stage): extraction and processing of raw materials (A1), transportation up to the factory gate (A2), manufacturing of the finished product and packaging (A3).
- A4-A5 (Construction process stage): transport of the finished product to final customers is assumed to be 1000km (A4). The installation phase (A5) includes the electricity consumption for the mixing. The packaging is collected and sent to treatment.
- C1, C2, C3, C4 (End of Life stage): The demolition phase (C1) includes the electricity for demolition. With a collection rate of 100% as C&D waste, the transports are carried out by lorry 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 incineration of a fraction of packaging waste (A5).

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	X	X	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X
Geography	IT, EU	IT, EU	IT	EU	EU	-	-	-	-	-	-	-	EU	EU	EU	EU	EU
Specific data	24,9%			-		-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	0%			-		-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-		-	-	-	-	-	-	-	-	-	-	-	-

MND: Module Not Declare

Table 3: Transport to the building site (A4)

Scenario information	Value	Unit
Means of transport: truck-trailer euro 5, gross weight 34-40 t, payload capacity 27 t		
Litres of fuel (diesel for truck)	0,0169	l/100km
Transport distance - truck	1E003	km
Capacity utilisation (including empty runs) - truck	85	%
Gross density of products transported	1850	kg/m3
Capacity utilisation volume factor	1	-

Table 4: Installation into the building site (A5)

Scenario information	Value	Unit
Ancillary materials for installation	0	kg
Water use	0,00025	m3
Other resources use	0	kg/m2
Electricity and other energy consumption for the installation	0,00396	kWh
Waste materials on building site before waste processing, generated by the product's installation (specified by type)	0,02 (Wood) 0,00056 (LDPE) 0,0289 (PP) 0,002 (Iron) 0,0106 (C&D waste)	kg
Output materials (specified by type) as result of waste processing at the building site e.g. of collection for recycling, for energy recovery, disposal (specified by route)	0,0179 (Incineration) 0,0121 (Landfill) 0,0321 (Recycling)	kg

Table 5: End of Life (C1-C4) per DU

Scenario information	Value	Unit
Collected separately	0	kg
Collected with mixed construction waste	1,05	kg
Reuse	0	kg
Recycling	0,736	kg
Energy recovery	0	kg
Landfill	0,316	kg
Transport to waste treatment	100	km

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. Cut-off criteria, where applied, are described in Table 3.

Input flows are covered for the whole formula.

Table 3: Cut-off criteria

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%

For the allocation procedure and principles consider the following table (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 specific production line
A3	All data are referred to 1 kg of packaged product A3-wastes: all data are allocated to the whole production plant

7 ENVIRONMENTAL PERFORMANCE AND INTERPRETATION

The following tables show the environmental impacts for the products considered according to the requirements of EN15804:2012+A2:2019/AC:2021. The Characterization Factors are based on EF 3.1 package. The results are referred to the declared unit (see § 4). The additional environmental indicators are not declared. The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.

We discourage the use of the outcomes from modules A1-A3 without considering the results obtained from modules C.

Silancolor Tonachino

(1 kg of product in 25 kg plastic drums)

Table 5: Silancolor Tonachino: Potential environmental impact – mandatory indicators according to EN 15804 referred to 1 kg of product in 25 kg plastic drums.

Indicator	Unit	A1 – A3	A4	A5	C1	C2	C3	C4	D
GWP_{TOTAL}	(kg CO_2 eq.)	4,81E-01	7,02E-02	4,70E-02	1,52E-03	9,07E-03	1,96E-03	1,31E-02	-1,69E-02
GWP_{FOSSIL}	(kg CO_2 eq.)	5,07E-01	6,62E-02	2,47E-02	1,51E-03	8,55E-03	1,97E-03	4,72E-03	-1,69E-02
$GWP_{BIOGENIC}$	(kg CO_2 eq.)	-2,62E-02	2,94E-03	2,23E-02	1,36E-05	3,80E-04	-3,74E-05	8,35E-03	-1,94E-05
GWP_{LULUC}	(kg CO_2 eq.)	5,66E-04	1,08E-03	1,54E-05	2,29E-07	1,40E-04	2,67E-05	2,83E-05	-2,15E-05
ODP	(kg CFC 11 eq.)	7,52E-08	9,49E-15	3,11E-14	3,42E-14	1,23E-15	3,57E-15	1,27E-14	-6,13E-14
AP	(mol H^+ eq.)	3,35E-03	2,09E-04	1,65E-05	2,90E-06	1,13E-05	9,88E-06	3,35E-05	-1,77E-05
$EP_{FRESHWATER}$	(kg P eq.)	7,17E-05	2,75E-07	1,36E-08	6,28E-09	3,55E-08	7,68E-09	1,07E-08	-1,61E-08
EP_{MARINE}	(kg N eq.)	5,77E-04	9,57E-05	5,94E-06	7,26E-07	4,06E-06	4,55E-06	8,63E-06	-6,99E-06
$EP_{TERRESTRIAL}$	(mol N eq.)	5,18E-03	1,08E-03	6,72E-05	7,60E-06	4,84E-05	5,03E-05	9,51E-05	-7,68E-05
POCP	(kg NMVOC eq.)	1,68E-03	2,00E-04	1,57E-05	1,92E-06	1,12E-05	1,26E-05	2,64E-05	-1,85E-05
$ADP_{MINERALS\&METALS}$*	(kg Sb eq.)	4,61E+00	5,61E-09	3,42E-10	2,82E-10	7,24E-10	2,07E-09	3,06E-10	-9,53E-10
ADP_{FOSSIL}*	(MJ)	7,69E+00	8,49E-01	4,74E-02	3,16E-02	1,10E-01	3,69E-02	6,23E-02	-2,74E-01
WDP*	(m^3 world eq.)	2,57E-01	9,98E-04	1,39E-02	4,10E-04	1,29E-04	3,78E-04	5,41E-04	-6,29E-04

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.

*The results of this environmental impact indicator shall be used with care as the uncertainties of the results are high and as there is limited experience with the indicator.

Table 6: Silancolor Tonachino: Potential environmental impact – additional mandatory and voluntary indicators referred to 1 kg of product in 25 kg plastic drums.

Indicator	Unit	A1 – A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG	(kg CO_2 eq.)	5,06E-01	6,75E-02	2,47E-02	1,52E-03	8,71E-03	2,01E-03	4,77E-03	-1,69E-02

GWP-GHG: This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO_2 is set to zero. This new indicator cannot be compared with the GWP-GHG of the EPD according to the old PCR 1.2 (and earlier versions).

Table 7: Silancolor Tonachino: Use of resources referred to 1 kg of product in 25 kg plastic drums.

Indicator	Unit	A1 – A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ	6,59E-01	7,31E-02	4,01E-01	2,28E-02	9,44E-03	3,94E-03	1,09E-02	-3,97E-02
PERM	MJ	3,80E-01	0,00E+00	-3,80E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,04E+00	7,31E-02	2,13E-02	2,28E-02	9,44E-03	3,94E-03	1,09E-02	-3,97E-02
PENRE	MJ	6,33E+00	8,49E-01	1,33E+00	3,16E-02	1,10E-01	3,69E-02	6,23E-02	-2,74E-01
PENRM	MJ	1,35E+00	0,00E+00	-1,29E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	7,69E+00	8,49E-01	4,74E-02	3,16E-02	1,10E-01	3,69E-02	6,23E-02	-2,74E-01
SM	kg	8,70E-02	0,00E+00	0,00E+00	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	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	0,00E+00	0,00E+00
FW	m^3	5,23E-03	8,15E-05	3,32E-04	1,74E-05	1,05E-05	1,10E-05	1,65E-05	-4,63E-05

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.

According to Annex 3 of PCR 1.3.4, the option B for the calculation of primary energy use indicators has been used.

Table 8: Silancolor Tonachino: Waste production and output flows referred to 1 kg of product in 25 kg plastic drums.

Indicator	Unit	A1 – A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	2,16E-002	3,25E-011	4,12E-011	4,56E-011	4,19E-012	5,34E-012	1,55E-011	-8,17E-011
NHWD	kg	2,01E-002	1,39E-004	1,53E-002	2,61E-005	1,79E-005	1,02E-005	3,16E-001	-1,50E-002
RWD	kg	1,09E-004	1,55E-006	4,30E-006	5,03E-006	2,00E-007	4,65E-007	6,54E-007	-7,39E-006
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for recycling	kg	7,26E-003	0,00E+00	3,21E-002	0,00E+00	0,00E+00	7,36E-001	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	1,79E-002	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	2,51E-002	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	4,71E-002	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: Silancolor Tonachino: Information on biogenic carbon content at the factory gate referred to 1 kg of product in 25 kg plastic drums.

Biogenic Carbon Content	Unit	Quantity
Biogenic carbon content in product	kg C	0,00E+00
Biogenic carbon content in packaging	kg C	8,60E-03

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

	Data source	GWP-GHG	Unit
Residual electricity grid mix (IT) – 2022	Ecoinvent 3.10	0,647	kg CO_2-eqv/kWh

8 DATA QUALITY

Table 10: Data quality

Dataset & Geographical reference	Database (source)	Temporary reference
A1; A3		
Polymeric dispersions	Ecoprofile from supplier	2022
Fillers	Sphera Database	2022
Additives	Ecoinvent 3.10	2023
Water	Sphera Database	2022
Residual electricity mix (IT)	Sphera Database	2022
Packaging components (EU)	Sphera Database; ecoinvent 3.10	2023
A2		
Truck, Euro 5, 27t payload (GLO)	Sphera Database	2023
Light train, gross tonne weight 500t / 363t payload (GLO)	Sphera Database	2023
Oceanic ship (27500 DWT – GLO)	Sphera Database	2023
Diesel for transport (EU)	Sphera Database	2020
Heavy Fuel Oil (EU)	Sphera Database	2020
Electricity grid mix (EU)	Sphera Database	2020
A4		
Truck, Euro 6, 27t payload (GLO)	Sphera Database	2023
Diesel for transport (EU)	Sphera Database	2020
A5		
Commercial waste in municipal waste incineration plant	Sphera Database	2023
Inert matter on landfill	Sphera Database	2023
Electricity grid mix (EU)	Sphera Database	2020

C1-C4		
Truck (EURO 6 - 9,3 ton payload – GLO)	Sphera Database	2023
Electricity grid mix (EU)	Sphera Database	2020
Diesel for transport (EU)	Sphera Database	2020
Construction waste dumping (EU)	Sphera Database	2023
Construction waste treatment (EU)	Sphera Database	2023

All data included in table above refer to a period between 2020-2023; 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 datasets are not more than 10 years old according to EN 15804 §6.3.8.2 “Data quality requirements”.

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).

Primary data concern the year 2023 and represent the whole annual production.

9 ADDITIONAL INFORMATION

9.1 Biogenic carbon content

For **Silancolor Tonachino** the biogenic carbon content in packaging at the factory gate referred to 1 kg of product with packaging is 8,60E-03 kgC.

9.2 Recycled content

Product	Recycled material content
Silancolor Tonachino	8% (pre-consumer)
Plastic Bucket	24% (post-consumer)

10 VERIFICATION AND REGISTRATION

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

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, 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/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. 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 1.3.4, 2024-04-30
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:	☒ EPD Process Certification ☐ EPD Verification
Third party verifier:	Certiquality S.r.l. Number of accreditations: 0013VV rev.000
Accredited or approved by:	Accredia
Procedure for follow-up of data during EPD validity involves third-party verifier	☒ Yes ☐ No

11 REFERENCES

- EN 15804: SUSTAINABILITY OF CONSTRUCTION WORKS - ENVIRONMENTAL PRODUCT DECLARATIONS - CORE RULES FOR THE PRODUCT CATEGORY OF CONSTRUCTION PRODUCTS
- EUROPEAN DIRECTIVE 2008/98/EC
- EUROSTAT - TREATMENT OF WASTE-BY-WASTE CATEGORY, HAZARDOUSNESS AND WASTE MANAGEMENT OPERATIONS
- 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); VERSION 1.3.4

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