



ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 for:

ULTRACARE ACID CLEANER



THE INTERNATIONAL EPD® SYSTEM

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	S-P-09752	2023-12-15	2028-12-14	Global

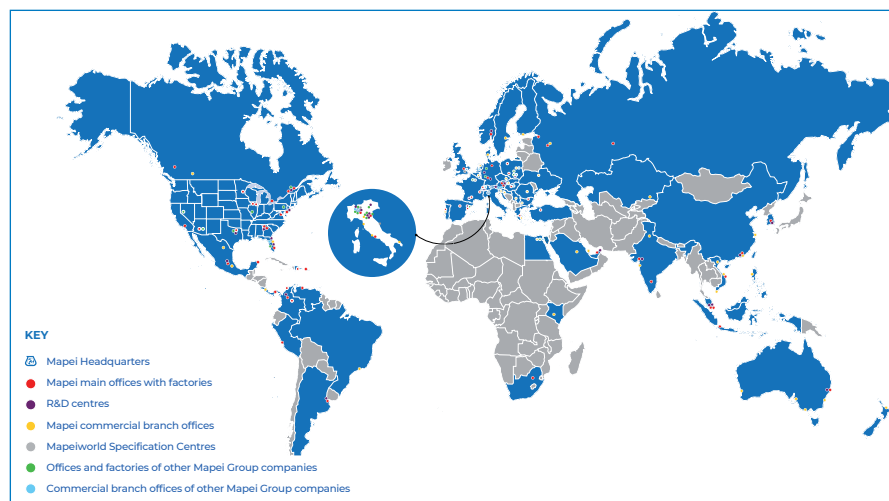


1. COMPANY DESCRIPTION / GOAL & SCOPE

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 86 production facilities located around the world in 35 different countries and in 5 different continents. Mapei also has 32 central laboratories. Most locations are ISO 9001 and ISO 14001 or EMAS-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 2011:10 (version 4.0.0, 2023-03-24) UN CPC 35322 and to have more comprehension about the environmental impacts related to **ULTRACARE ACID CLEANER** manufactured in Mapei SpA located in Mediglia (MI-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 **ULTRACARE ACID CLEANER**. This analysis shall not support comparative assertions intended to be disclosed to the public.

2. PRODUCT DESCRIPTION

ULTRACARE ACID CLEANER is a concentrated cleaning product in a liquid form that can be diluted in water according to the amount of dirt and residue to be removed. UltraCare Acid Cleaner is based on a special inorganic acid, with a buffered formulation, whose advantage is to have an aggressiveness towards stains and efflorescence equal to that of much stronger acids (muriatic/chloridian, sulfuric, etc.), without developing, like the latter, very dangerous toxic fumes. In any case, using the product in well-ventilated areas is recommended.

ULTRACARE ACID CLEANER is available in 1 and 5 litres tank.

Table 1: Technical specification of the Ultracare acid cleaner

Technical specification of the product	
Application	Manual/Machines*
Range of dilution	From 1:5 to 1:10
Density	1.10 g/cm ³
Consumption	-

*Concerning the energy consumption of the machines employed for the application of the finished product were used specific data from the suppliers.

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



3. CONTENT DECLARATION

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

Table 2: Composition referred to 1 kg of finished product with packaging.

Materials	Percentage (%) by mass
Organic substances	<9%
Inorganic substances	<80%
Water	<14%
Distribution Packaging	
Cardboard	<5%
Consumer Packaging	
HDPE	<10%
PP	<1%

3.1 Recycled Material

Table 3: content of recycled material

	Quantity	Type (pre/post consumer)
Product	0%	-
Distribution packaging	0%	-
Consumer packaging	45%	Post consumer

3.2 Information chemical substances

According to Regulation (EC) No 1907/2006: 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.

According to Regulation (EC) No 1272/2008:

	Name	CAS number	Classification	Q.ty (%)
	Phosphoric Acid	7664-38-2	Met. Corr. 1, H290 Eye Dam. 1, H318 Acute Tox. 4, H302 Skin Corr. 1B, H314	≥10 - <20

4. DECLARED UNIT AND REFERENCE SERVICE LIFE

The declared unit is 1 kg of finished product in 1 litres tank.

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

5. SYSTEM BOUNDARIES AND ADDITIONAL TECHNICAL INFORMATION

The system boundaries considered for the product are grouped in three macro modules obtaining a “cradle to grave” approach:

- **Upstream:** this module includes the processes upstream of the manufacturing of the product (from cradle to gate). These are related to the supply chain.
- **Core:** this module includes the manufacturing processes (from gate to gate).
- **Downstream:** this module includes the processes downstream of the manufacturing of the product (from gate to grave). These generally are related to scenarios of the product since it leaves the gate of the factory until its end of life.

Figure 2: scheme of the system boundaries and processes considered

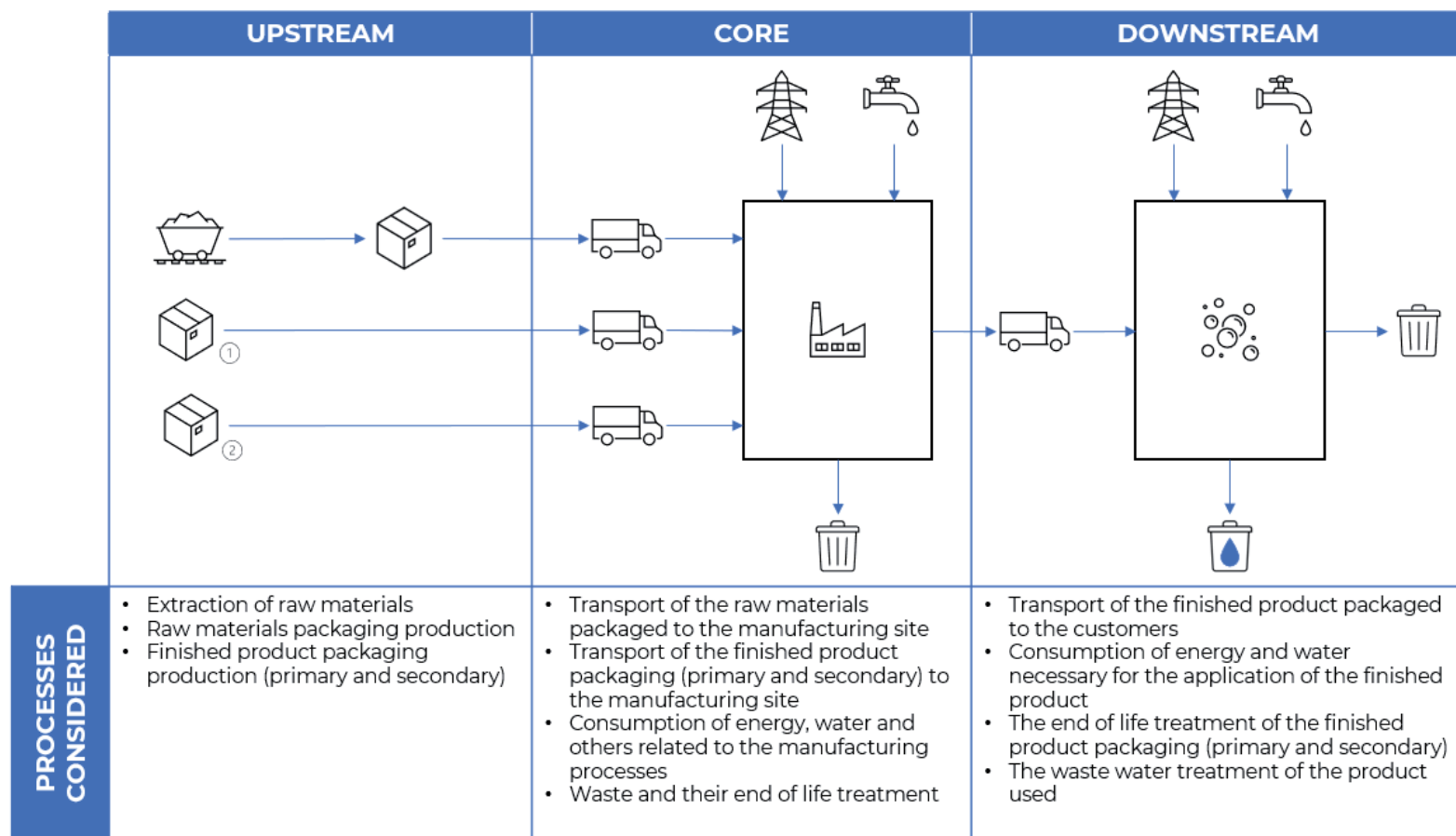


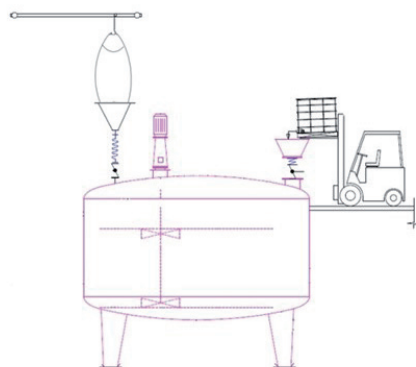
Table 4: End of life scenario for packaging according to eurostat - Treatment of waste by waste category, hazardousness and waste management operations

Packaging material	Recycling	Incineration	Landfill
Plastic	71%	24%	5%
Wood	46%	54%	0%
Ferrous metal	100%	0%	0%
Paper/Cardboard	98%	2%	0%

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, big bags or tanks, 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, stored in the finished products warehouse. The quality of final products is controlled before the sale.

Figure 3: Production process detail



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.

For the allocation procedure and principles consider the following table (Table 6):

Table 6: Allocation procedure and principles

Module	Allocation Principle
Upstream Downstream	All data are referred to 1 kg of product
Core	All data are referred to 1 kg of packaged product Electricity is allocated to the specific production line

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.

The following tables show the environmental impacts for the product. The results are referred to the declared unit (see § 4). The additional environmental indicators are not declared.

The results were calculated according to the list of Environmental Performance Indicators version 2.0 (on EPD International website, www.environdec.com). This version has adopted the core environmental impact indicators of EN 15804:2012+A2:2019/AC:2021 as mandatory indicators. The characterisation factors (CF) for Version 2.0 of the default list are based on version 3.1 of the reference package for CFs used in the PEF framework (EF 3.1), instead of the previous version (EF 3.0).

ULTRACARE ACID CLEANER

(1 kg of product in 1 LITRE PLASTIC TANK)

Table 7: ULTRACARE ACID CLEANER: Potential environmental impact – mandatory indicators referred to 1 kg of product in 1 litre plastic tank

Indicator	Unit	Upstream	Core	Downstream	Total
GWP_{TOTAL}	(kg CO ₂ eq.)	9,88E-01	4,82E-02	1,86E-01	1,22E+00
GWP _{FOSSIL}	(kg CO ₂ eq.)	1,02E+00	3,04E-02	1,12E-01	1,17E+00
GWP _{BIOGENIC}	(kg CO ₂ eq.)	-4,84E-02	1,77E-02	7,39E-02	4,32E-02
GWP _{LULUC}	(kg CO ₂ eq.)	1,17E-02	7,95E-05	6,12E-04	1,24E-02
ODP	(kg CFC 11 eq.)	3,64E-08	2,56E-13	-7,51E-12	3,64E-08
AP	(mol H ⁺ eq.)	6,08E-02	4,34E-05	2,42E-04	6,11E-02
EP _{FRESHWATER}	(kg P eq.)	2,99E-04	5,58E-08	8,13E-08	2,99E-04
EP _{MARINE}	(kg N eq.)	1,01E-03	1,79E-05	1,07E-04	1,13E-03
EP _{TERRESTRIAL}	(mol N eq.)	9,32E-03	2,00E-04	1,20E-03	1,07E-02
POCP	(kg NMVOC eq.)	6,82E-03	4,02E-05	2,22E-04	7,08E-03
ADP _{MINERALS&METALS} *	(kg Sb eq.)	8,91E-06	1,53E-09	-1,84E-09	8,91E-06
ADP _{FOSSIL} *	(MJ)	1,91E+01	2,52E-01	1,19E+00	2,05E+01
WDP*	(m ³ world eq.)	2,42E+00	4,55E-02	1,49E+00	3,96E+00

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 on these results are high or as there is a limited experience with the indicator

Table 8: ULTRACARE ACID CLEANER: Use of resources referred to 1 kg of product in 1 litre plastic tank

Indicator	Unit	Upstream	Core	Downstream	Total
PERE	MJ	2,19E+00	6,65E-02	1,25E-01	2,38E+00
PERM	MJ	7,80E-01	0,00E+00	0,00E+00	7,80E-01
PERT	MJ	2,97E+00	6,65E-02	1,25E-01	3,16E+00
PENRE	MJ	1,91E+01	2,53E-01	1,19E+00	2,05E+01
PENRM	MJ	4,59E+00	0,00E+00	0,00E+00	4,59E+00
PENRT	MJ	2,37E+01	2,53E-01	1,19E+00	2,51E+01
SM	kg	4,00E-02	0,00E+00	0,00E+00	4,00E-02
RSF	MJ	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
FW	m ³	5,65E-02	1,07E-03	3,47E-02	9,23E-02

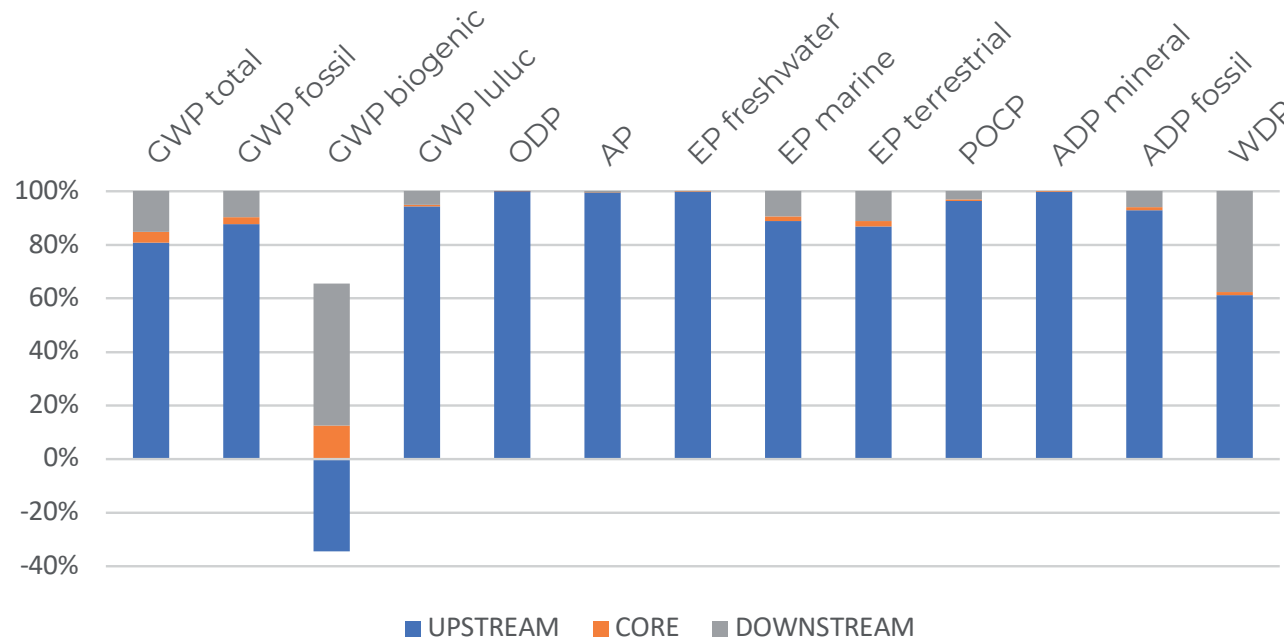
PERE: Use of renewable primary energy excluding renewable primary energy resources used as raw materials; **PERM:** Use of renewable primary energy resources used as raw materials; **PERT:** Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials); **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.

The tables above show absolute results for each of the environmental impact categories. They clearly indicate that the upstream stage has the highest contribution for each of them and in some accounts for more than 90% of the total impact.

The upstream and downstream stages have a considerable impact in terms of biogenic carbon since these stages considered respectively the production and the disposal of the consumer and distribution packaging.

The core stage has a negligible impact in some impact categories, while in others, such the GWP biogenic, has a relevant impact. In this particular case, it is probably linked to the disposal of the packaging of raw materials.

Figure 4: summary of the main impact categories



8. DATA QUALITY

Table 10: Data quality

Dataset & Geographical reference	Database (source)	Temporary reference
Upstream		
Organic substances	Ecoinvent 3.9.1 Sphera database	2022 2022-2025
Inorganic substances	Ecoinvent 3.9.1 Sphera database	2022 2022-2025
Water production, deionised	Ecoinvent 3.9.1	2022
Packaging	Ecoinvent 3.9.1 Sphera database	2021-2022 2022-2025
Core		
Transport	Sphera database	2019-2025
Residual mix	Sphera database	2019-2025
Tap water from surface water	Sphera database	2022-2025
Waste treatment	Sphera database	2022-2025
Truck, Euro 6 A-C, 12 - 14t gross weight/ 9.3t payload capacity	Sphera database	2022-2025
Downstream		
Transport	Sphera database	2019-2025
Residual mix	Sphera database	2019-2025
Tap water from surface water	Sphera database	2022-2025
Waste treatment	Sphera database	2022-2025
Truck, Euro 6 A-C, 12 - 14t gross weight/ 9.3t payload capacity	Sphera database	2022-2025

All data included in table above refer to a period between 2019 and 2025; the most relevant ones are specific from supplier, while the others (i.e. transport and minor contribution dataset), come from European and global databases.

Primary data concern the year 2022 and represent the whole annual production.

9. ADDITIONAL INFORMATION

9.1 CO₂ offset

Total CO₂ emissions measured throughout the entire life cycle have been offset through the purchasing of certified carbon credits in support of renewable energy and forestry protection projects.



For further information please check <https://www.mapei.com/it/en/about-us/product-sustainability/sustainable-products>

9.2 Indication for the calculation of different scenario of module A4 (Transport from the factory to the jobsite)

To calculate the impact of transporting 1 kg of product from the factory gate (Sagstua) to the jobsite, use the following formula:

$$\text{Transport Impact} = EF \text{ (kg/DU)} * \text{distance (km)}$$

EF: Emission Factor; DU: declared Unit

Table 15: The EFs are related to 1 kg of product transported with truck EURO 5 and EURO 6

Impact Category	Unit	EF (EURO 5)	EF (EURO 6)
GWP_{TOTAL}	(kg CO ₂ eq.)/km	6,08E-05	5,96E-05
GWP _{FOSSIL}	(kg CO ₂ eq.)/km	6,00E-05	5,89E-05
GWP _{BIOGENIC}	(kg CO ₂ eq.)/km	2,15E-07	2,12E-07
GWP _{LULUC}	(kg CO ₂ eq.)/km	5,46E-07	5,37E-07
ODP	(kg CFC 11 eq.) /km	7,67E-18	7,55E-18
AP	(mol H ⁺ eq.) /km	1,90E-07	7,15E-08
EP _{FRESHWATER}	(kg P eq.) /km	2,16E-10	2,12E-10
EP _{MARINE}	(kg N eq.) /km	8,62E-08	2,38E-08
EP _{TERRESTRIAL}	(mol N eq.) /km	9,69E-07	2,87E-07
POCP	(kg NMVOC eq.) /km	1,72E-07	6,15E-08
ADP _{MINERALS&METALS}	(kg Sb eq.) /km	3,88E-12	3,82E-12
ADP _{FOSSIL}	(MJ) /km	8,03E-04	7,90E-04
WDP	(m ³ world eq.) /km	7,12E-07	7,01E-07

Example:

If the product is transported by truck (EURO 6) from Mediglia (production plant) to Oslo (Jobsite) for approximately 90 km, the GWP impact will be:

$$GWP_{TOTAL} = 5,96E-05 * 1.947 \text{ km} = 1,16E-01 \text{ kg CO}_2\text{eq}$$

10. 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 programs 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 characterization factors); have equivalent content declarations; and be valid at the time of comparison.

Accountabilities for PCR, LCA and independent, third-party verification

PCR:	PCR 2011:10 DETERGENTS AND WASHING PREPARATIONS, Version 4.0.0, 2023-03-24, UN CPC code 35322
PCR review was conduct-ed by:	The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Lars-Gunnar Lindfors 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: 0008PRD rev.000
Accredited or approved by:	Accredia
Procedure for follow-up of data during EPD validity involves third-party verifier	☒ Yes ☐ No

11. REFERENCES

- EUROPEAN DIRECTIVE 2008/98/EC
- EUROPEAN RESIDUAL MIXES VERSION 1.0, 2022-05-31 (AIB: ASSOCIATION OF ISSUING BODIES)
- GENERAL PROGRAMME INSTRUCTIONS OF THE INTERNATIONAL EPD® SYSTEM. VERSION 4.0
- ISO 14025 ENVIRONMENTAL LABELS AND DECLARATIONS - TYPE III ENVIRONMENTAL DECLARATIONS - PRINCIPLES AND PROCEDURES
- ISO 14044 ENVIRONMENTAL MANAGEMENT – LIFE CYCLE ASSESSMENT – REQUIREMENTS AND GUIDELINES
- PCR 2011:10 DETERGENTS AND WASHING PREPARATIONS, UN CPC CODE 35322; VERSION 4.0.0
- EUROSTAT - TREATMENT OF WASTE BY WASTE CATEGORY, HAZARDOUSNESS AND WASTE MANAGEMENT OPERATIONS

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