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Environmental Product Declaration

Average EPD

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

REair Photo Coat / Photo Coat Green

REair s.r.l



Programme
EPD Square | www.epdsquare.com

Programme operator
EPD Square, s.r.o.

EPD Registration number
SQ 00-020

Publication date
19.12.2024

Revision date
14.01.2026

Valid until
18.12.2029

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General information

Product
REair Photo Coat
REair Photo Coat Green

Program operator
EPD Square, s.r.o.

Email: info@epdsquare.com

Registration number
SQ 00-020

Publication date
19.12.2024

Valid until date
18.12.2029

Owner of the declaration
REair s.r.l
Via Montenapoleone, 10
20121, Milan
Italy
Contact person: Raffaella Moro
Email: direzione@reair.it

Manufacturer
REair s.r.l
Via Montenapoleone, 10
20121, Milan
Italy
Email: info@reair.it

Place of production
Urgnano (BG), Malnate
Italy

Product Category Rules (PCR)
The CEN standard EN 15804 serves as the core PCR. In addition, EPD Square PCR v1.0, 2024 is used.

Declared unit
1 kg

Mass per DU
1 kg

UN CPC code
35110 – Paints and varnishes and related products

Geographical scope
Italy

Year of study
2023

Comparability
EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in the context of the building.

EPD author
Carol Monticelli, Camilla Vertua, Department ABC, TAN Group e LCTeams, Politecnico di Milano

Verification type
Independent verification of the declaration and data, according to ISO14025:2006
Internal: ☐
External: ☒

Verified by
prof. Ing. Silvia Vilčeková, PhD.



The owner of the declaration shall be liable for the underlying information and evidence.
EPD Square shall not be liable with respect to manufacturer, life cycle assessment data and evidence.

System boundaries

This EPD is based on system boundary cradle to gate (A1-A3) with modules C1-C4, module D.

Modules declared and geographical scope

	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	IT	IT	IT	-	-	-	-	-	-	-	-	-	IT	IT	IT	IT	IT

MND = Modules not declared.

Description of Organization

REair is an Italian clean-tech start-up, specialized in the development and the manufacturing of cutting-edge technologies and advanced solutions tailored for air purification, pollutant reduction, surface sanitization, and the enhancement of Indoor Air Quality (IAQ). REair developed transparent photocatalytic coatings with both outdoor and indoor applications. The company offers innovative and patented solutions for surface treatment (active surface coatings) according to detailed working protocols, that guarantee effective, long-lasting and natural indoor and outdoor solutions without chemical solvents with a prevention approach in the protection of people's health.

REair solutions are based on the principle of photocatalysis, a natural process of strong, rapid and effective oxidative degradation of pollutants and microorganisms spread in the environment, obtained with a process that is activated thanks to the combined action of sunlight (or artificial light) and of the air. The company is registered with the innovative start-up status in the Milan (Italy) Chamber of Commerce.

For more information please visit: https://www.reair.it/en/

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Product information

Product name
REair Photo Coat / Photo Coat Green

Product description
REair Photo Coat is used for outdoor applications (mainly for residential and business buildings) and the improvement of outdoor air quality thanks to its depolluting properties due to photocatalytic processes.
REair Photo Coat Green is used for outdoor applications (mainly for infrastructures, precast concrete manufacts and ready-mix concrete solutions). Thanks to their depolluting properties due to photocatalytic processes, the improvement of outdoor air quality is the main target. Further, they possess self-cleaning and hydrophobic performances. In other words, the two products have the same composition for different fields of application (buildings, infrastructures).

The product is currently manufactured in Italy.

Product application
The product REair Photo Coat / Photo Coat Green can be applied to porous external walls (vertical and horizontal surfaces). Further, it can be applied in outdoor infrastructures, building elements, building facades, on these types of materials: painted and decorated surfaces, silicate mineral plaster, finishes for ETICS systems, bricks, clinker, terracotta materials, concrete and cement mortars, natural and reconstructed stones porous substrates in general.

Geographical scope
Italy

Product contents information

Product components	Content, %	Post-consumer material, weight-%	Renewable material, weight-%
Photocatalytic dispersion containing titanium dioxide (anatase type)	1-5	0	0
Admixtures	0,1-0,5	0	0
Deionised water	95-99	0	0
TOTAL	100	0	0

Manufacturing process

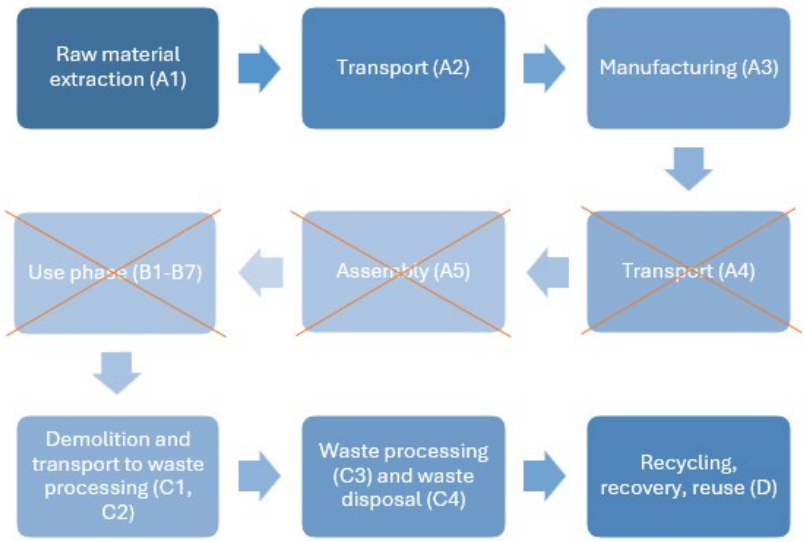
- Collection of raw sources, as delivered by different suppliers.
- Mixing process of these substances with water in a reactor and production of the final solution

The product is obtained through a proprietary mixing procedure in controlled conditions of temperature, pressure and time.

The production step at the basis of this process is patented by REair: Italian patent nr. 10202018000003836 (21/3/2018), international patent nr. EP4031645 (18/11/2019 - confirmation on 15/10/2025).

The products Photo Coat and Photo Coat Green are manufactured in the same plant, with identical production route and environmental characteristics and are therefore functionally equivalent:

- Same production process
- Same production steps
- Same technologies
- Same emissions and associated waste



Life cycle assessment

Cut-off criteria

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

Allocation, estimations, and assumptions

Allocation is based on annual production rate and made with high accuracy and precision. The values for 1 kg of the products which are used within this study are calculated by considering the total product weight per annual production. In

the production plant, several kinds of products are produced; since the production processes of these products are similar, the annual production percentages are taken into consideration for allocation. According to the ratio of the annual production of the declared product to the total annual production at the factory, the annual total energy consumption, packaging materials and the generated waste per the declared product are allocated. Subsequently, the produced products output fixed to 1 kg and the corresponding amount of product is used in the calculations.

Database(s) and LCA software

This EPD has been created using primary data provided by manufacturer and secondary data drawn from both Ecoinvent 3.10. The software Simapro 9.5.0.2 was used for the LCA model. Characterisation factors are based on Environmental Footprint 3.1 (EF 3.1).

LCA scenario and additional technical information

Manufacturing energy scenario

Electricity data source and quality	Ecoinvent 3.10 Dataset (electricity, low voltage, residual mix - IT - electricity, low voltage)
Electricity CO_2e / kWh	0.621
Energy data source and quality	Ecoinvent 3.10 Dataset (market for electricity, low voltage - IT - electricity, low voltage)
Heating CO_2e / kWh	0.355

Use Phase (B1-B7)

The modules for use phase (B1-B7) are not included in the LCA.

End of Life (C1, C2, C3, C4)

Demolition of REair Photo Coat / Photo Coat Green takes place with the whole demolition of the building/construction. Thus, it is assumed that energy used for the demolition of the product has minor significance and the environmental impact of this module is set to be zero. At the end of life, in the demolition phase 100% of the waste is assumed to be collected as mixed construction waste. Transportation distance to the closest disposal area is estimated as 50 km by a 16-32 tonne lorry which is the most common transportation method. It is assumed that the product is landfilled.

	Value	Unit
Collected separately	1	kg
Reuse	0	kg
Recycling	0	kg
Energy recovery	0	kg
To landfill	1	kg

LCA results

Core environmental impact indicators – EN 15804+A2

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP-total	kg CO_2 eq.	5.4E-02	0.0E+00	9.8E-03	0.0E+00	1.7E-02	0.0E+00
GWP-fossil	kg CO_2 eq.	5.4E-02	0.0E+00	9.8E-03	0.0E+00	1.7E-02	0.0E+00
GWP-biogenic	kg CO_2 eq.	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
GWP-LULUC	kg CO_2 eq.	2.7E-04	0.0E+00	3.9E-06	0.0E+00	1.3E-06	0.0E+00
ODP	kg CFC11 eq.	1.4E-06	0.0E+00	1.4E-10	0.0E+00	4.4E-11	0.0E+00
AP	mol H^+ eq.	2.6E-04	0.0E+00	3.3E-05	0.0E+00	7.9E-06	0.0E+00
EP-freshwater	kg P eq.	1.1E-05	0.0E+00	7.7E-07	0.0E+00	1.3E-07	0.0E+00
EP-marine	kg N eq.	5.7E-05	0.0E+00	1.1E-05	0.0E+00	2.1E-06	0.0E+00
EP-terrestrial	mol N eq.	6.0E-04	0.0E+00	1.2E-04	0.0E+00	2.3E-05	0.0E+00
POCP	kg NMVOC eq.	2.3E-04	0.0E+00	4.5E-05	0.0E+00	1.0E-05	0.0E+00
ADP-M&M	kg Sb eq.	3.7E-07	0.0E+00	3.1E-08	0.0E+00	3.6E-09	0.0E+00
ADP-fossil	MJ	8.0E-01	0.0E+00	1.4E-01	0.0E+00	4.1E-02	0.0E+00
WDP	m^3	2.6E-01	0.0E+00	6.2E-04	0.0E+00	-1.5E-03	0.0E+00

GWP-total: Global Warming Potential; 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, Accumulated Exceedance; EP-freshwater: Eutrophication potential, fraction of nutrients reaching freshwater end compartment; See "additional requirements" for indicator given as PO4 eq. EP-marine: Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-terrestrial: Eutrophication potential, Accumulated Exceedance; POCP: Formation potential of tropospheric ozone; ADP-M&M: Abiotic depletion potential for non-fossil resources (minerals and metals); ADP-fossil: Abiotic depletion potential for fossil resources; WDP: Water deprivation potential, deprivation weighted water consumption

Additional (optional) environmental impact indicators – EN 15804+A2

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PM	Disease incidence	3.9E-09	0.0E+00	7.8E-10	0.0E+00	1.1E-10	0.0E+00
IRP	kBq U235 eq.	2.5E-03	0.0E+00	1.1E-04	0.0E+00	2.3E-05	0.0E+00
ETP-fw	CTUe	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
HTP-c	CTUh	1.5E-10	0.0E+00	5.1E-11	0.0E+00	3.1E-11	0.0E+00
HTP-nc	CTUh	3.3E-09	0.0E+00	8.5E-11	0.0E+00	9.2E-11	0.0E+00
SQP	Dimensionless	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

PM: Particulate matter emissions; IRP: Ionising radiation, human health; ETP-fw: Ecotoxicity (freshwater); ETP-c: Human toxicity, cancer effects; HTP-nc: Human toxicity, non-cancer effects; SQP: Land use related impacts / soil quality

Use of Natural Resources

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
RPEE	MJ	3,13E-02	0.0E+00	9,15E-04	0.0E+00	2,71E-04	0.0E+00
RPEM	MJ	2,03E-02	0.0E+00	8,87E-04	0.0E+00	1,91E-04	0.0E+00
TPE	MJ	5.2E-02	0.0E+00	1.8E-03	0.0E+00	4.6E-04	0.0E+00
NRPE	MJ	4,85E-02	0.0E+00	1,77E-03	0.0E+00	5,63E-04	0.0E+00
NRPM	MJ	4,85E-02	0.0E+00	1,44E-01	0.0E+00	-4,85E-02	0.0E+00
TRPE	MJ	8.5E-01	0.0E+00	1.5E-01	0.0E+00	4.4E-02	0.0E+00
SM	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
RSF	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
NRSF	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
W	m^3	2.6E-01	0.0E+00	6.2E-04	0.0E+00	9.3E-05	0.0E+00

RPEE: Renewable primary energy resources used as energy carrier; RPEM: Renewable primary energy resources used as raw materials; TPE: Total use of renewable primary energy resources; NRPE: Non-renewable primary energy resources used as energy carrier; NRPM: Non-renewable primary energy resources used as materials; TRPE: Total use of non-renewable primary energy resources; SM: Use of secondary materials; RSF: Use of renewable secondary fuels; NRSF: Use of non-renewable secondary fuels; W: Use of net fresh water

End of life – Waste

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
HW	KG	5.1E-06	0.0E+00	9.4E-07	0.00E+00	4E-07	0.00E+00
NHW	KG	2.3E-02	0.0E+00	6.5E-03	0.00E+00	1E-02	0.00E+00
RW	KG	7.6E-07	0.0E+00	2.8E-08	0.00E+00	6E-09	0.00E+00

HW: Hazardous waste disposed; NHW: Non-hazardous waste disposed; RW: Radioactive waste disposed

End of life – Output flows

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
CR	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MR	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
MER	kg	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
EEE	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
ETE	MJ	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00

CR: Components for reuse; MR: Materials for recycling; MER: Materials for energy recovery; EEE: Exported electric energy; ETE: Exported thermal energy

Information describing biogenic carbon content at factory gate

Biogenic carbon content	Value	Unit
Biogenic carbon content in product	0	kg C
Biogenic carbon content in the accompanying packaging	0	kg C

Specific data (GWP-GHG) and data variation for A1-A3

Specific data and data variation	
Specific data	<60%
Variation - product	>99%
Variation - site	Not relevant

Hazardous substances

☒ The product does not contain any REACH SVHC substances in amounts greater than 0.1 %.

Contact information

Programme operator
EPD Square, s.r.o.
Karadžičova 16
811 09 Bratislava
Slovakia
Email: info@epdsquare.com

EPD owner
REAIR s.r.l
Via Montenapoleone, 10
20121, Milan
Italy
Contact person: Raffaella Moro
Email: direzione@reair.it
Website: https://www.reair.it/en/

Author of Life Cycle Assessment (LCA)
Carol Monticelli, Camilla Vertua, Department ABC, TAN Group e LCTeams, Politecnico di Milano
Email: carol.monticelli@polimi.it, paola.gallo@polimi.it, camilla.vertua@polimi.it

EPD verifier
prof. Ing. Silvia Vilčeková, PhD.
Email: vilcekova@epdsquare.com

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Annex

Environmental impacts – EN 15804+A1, CML/ISO 21930

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO_2 eq.	5.4E-02	0.0E+00	9.7E-03	0.0E+00	1.7E-02	0.0E+00
ODP	kg CFC11 eq.	1.9E-06	0.0E+00	1.1E-10	0.0E+00	3.5E-11	0.0E+00
AP	kg SO_2 eq.	2.1E-04	0.0E+00	2.5E-05	0.0E+00	6.3E-06	0.0E+00
EP	kg PO_4 eq.	6.0E-05	0.0E+00	7.0E-06	0.0E+00	1.7E-04	0.0E+00
POCP	kg C_2H_4 eq.	2.0E-05	0.0E+00	1.5E-06	0.0E+00	5.0E-07	0.0E+00
ADP-M&M	kg Sb eq.	3.7E-07	0.0E+00	3.1E-08	0.0E+00	3.6E-09	0.0E+00
ADP-fossil	MJ	7.5E-01	0.0E+00	1.4E-01	0.0E+00	3.7E-02	0.0E+00

GWP: *Global Warming Potential;* ***ODP:*** *Depletion potential of the stratospheric ozone layer;* ***AP:*** *Acidification potential, Accumulated Exceedance;* ***EP:*** *Eutrophication potential, fraction of nutrients reaching freshwater end compartment; See "additional requirements" for indicator given as PO4 eq.;* ***POCP:*** *Formation potential of tropospheric ozone;* ***ADP-M&MI:*** *Abiotic depletion potential for non-fossil resources (minerals and metals);* ***ADP-fossil:*** *Abiotic depletion potential for fossil resources*

Environmental impacts – GWP-GHG

Indicator	Unit	A1-A3	C1	C2	C3	C4	D
GWP - GHG	kg CO_2e	5.4E-02	0.0E+00	9.8E-03	0.0E+00	1.7E-02	0.0E+00

GWP- GHG*: Global Warming Potential, greenhouse gases*

Revision Note – 14 January 2026

This study has been revised and updated on 14 January 2026. The revision relates to the presentation of the product composition in percentages and the removal of the detailed production process, as the underlying production step is patented by REair: Italian patent nr. 10202018000003836 (21/3/2018), international patent nr. EP4031645 (18/11/2019 - confirmation on 15/10/2025).