



ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH ISO 21930 & ISO 14025

Arto Red Body Glazed Ceramic Tile

Arto



EPD HUB, HUB-6112

Published on 23.04.2026, last updated on 23.04.2026, valid until 23.04.2031

Life Cycle Assessment study has been performed in accordance with the requirements of ISO 21930 & ISO 14025, EPD Hub PCR version 1.2 (24 Mar 2025) and JRC characterization factors EF 3.1.



Created with One Click LCA



GENERAL INFORMATION

MANUFACTURER

Manufacturer	Arto
Address	15209 S Broadway Street, Gardena, California 90248
Contact details	julie@arto.com
Website	https://www.arto.com/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	ISO 21930:2017 and ISO 14025
PCR	EPD Hub Core PCR Version 1.2, 24 Mar 2025 UL PCR Part B: Flooring EPD Requirements (UL 10010-7)
Sector	Construction product
Category of EPD	Third party verified EPD
Parent EPD number	
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Julie Grajeda
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal verification ☒ External verification
EPD verifier	Yazan Badour as an authorized verifier for EPD Hub

This EPD is intended for business-to-business and/or business-to-consumer communication. The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from

different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with ISO 21930 and if they are not compared in a building context.

PRODUCT

Product name	Arto Red Body Glazed Ceramic Tile
Additional labels	Studio, Monrovia, and Oleson, Scirocco, Silk Road, Peninsula and all Hand Painted Tile collections – all glaze colors
Product reference	
Place(s) of raw material origin	United States
Place of production	15209 South Broadway Street, Gardena, California 90248
Place(s) of installation and use	United States
Period for data	1-1-2024 to 12-31-2024
Averaging in EPD	No grouping
Variation in GWP-fossil for A1-A3 (%)	Not applicable
GTIN (Global Trade Item Number)	-
A1-A3 Specific data (%)	59.4

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m2 of Ceramic Tile
Declared unit mass	23.238 kg
Mass of packaging	1.95 kg
GWP-TRACI, A1-A3 (kgCO ₂ e)	6.83E+00
Secondary material, inputs (%)	34.9
Secondary material, outputs (%)	0
Total energy use, A1-A3 (kWh)	33.1
Net freshwater use, A1-A3 (m ³)	0.07

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Arto is a US-based manufacturer of handcrafted ceramic, concrete, and glazed brick tiles, headquartered in Gardena, California. Founded in 1966, Arto specializes in artisanal surface materials for residential and commercial applications, including floors, walls, and facades. Arto's product range includes hand-painted ceramic tile, wet-cast concrete tile, and glazed thin brick tile. The red body glazed ceramic tile products covered in this EPD are high-fired terracotta tiles produced at Arto's Gardena facility from locally sourced clays and minerals, available in glazed and unglazed formats across a wide range of sizes, shapes, and colors. Arto is committed to sustainable manufacturing practices and transparency in environmental reporting through the publication of verified Environmental Product Declarations.

PRODUCT DESCRIPTION

Arto red body ceramic tiles are high-fired terracotta tiles manufactured in Gardena, California. They are produced in both glazed and unglazed formats and made from locally sourced clays, grog, feldspar, kaolin, and mineral additives. Glazed products include a thin glaze layer for added color, finish, and performance. The tiles are available in multiple sizes, shapes, textures, and colors, ranging from natural terracotta tones to bright glazes. Typical applications include floors, walls, facades, and countertops in residential, commercial, and institutional buildings. The tiles are durable, low-maintenance, and expected to have a service life exceeding 50 years when properly installed.

Further information can be found at:
<https://www.arto.com/>

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass %	Material origin
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Metals	-	-
Minerals	100	United States
Fossil materials	-	-
Bio-based materials	-	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	11.08

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m2 of Ceramic Tile
Mass per declared unit	23.238 kg
Functional unit	
Reference service life	

SUBSTANCES, REACH - VERY HIGH CONCERN

Substances of very high concern	EC	CAS
Cobalt (from cobalt carbonate pigment in glaze)	208-169-4	513-79-1

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries	
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
x	x	x	x	x	ND	ND	ND	ND	ND	ND	ND	x	x	x	x	x	
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/ demolition	Transport	Waste processing	Disposal	Reuse	Recycling

Modules not declared = ND. Modules not relevant = MNR

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material

losses occurring during the manufacturing processes as well as losses during electricity transmission.

Raw materials include clays, grog, barium carbonate, iron-oxide pigment, and an averaged glaze formulation.

The materials are transported to the manufacturers production facility, where the manufacturing includes material preparation, shaping, drying, followed by glazing/decoration, firing, and finally, polishing. The manufacturing process requires electricity and fuels for the different equipment as well as heating.

Certain ancillary materials are also included. The product is finally packaged in cardboard and polyethylene packaging film and sent to the installation site on a wooden pallet.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

Transport from Arto's Gardena, CA, facility to U.S. construction sites is modeled with an average distance of approximately 1,200 km by truck. Installation requires cement-based grout, small amounts of water, and electricity for tools and cleanup.

Tile off-cuts and packaging waste (cardboard, pallets, plastic) generated during installation are modeled as landfill disposal.

PRODUCT USE AND MAINTENANCE (B1-B7)

No additional maintenance beyond routine cleaning with water-based cleaning products is required.

The tile is inert, non-emitting, and does not require replacement or special treatment during the use phase.

Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

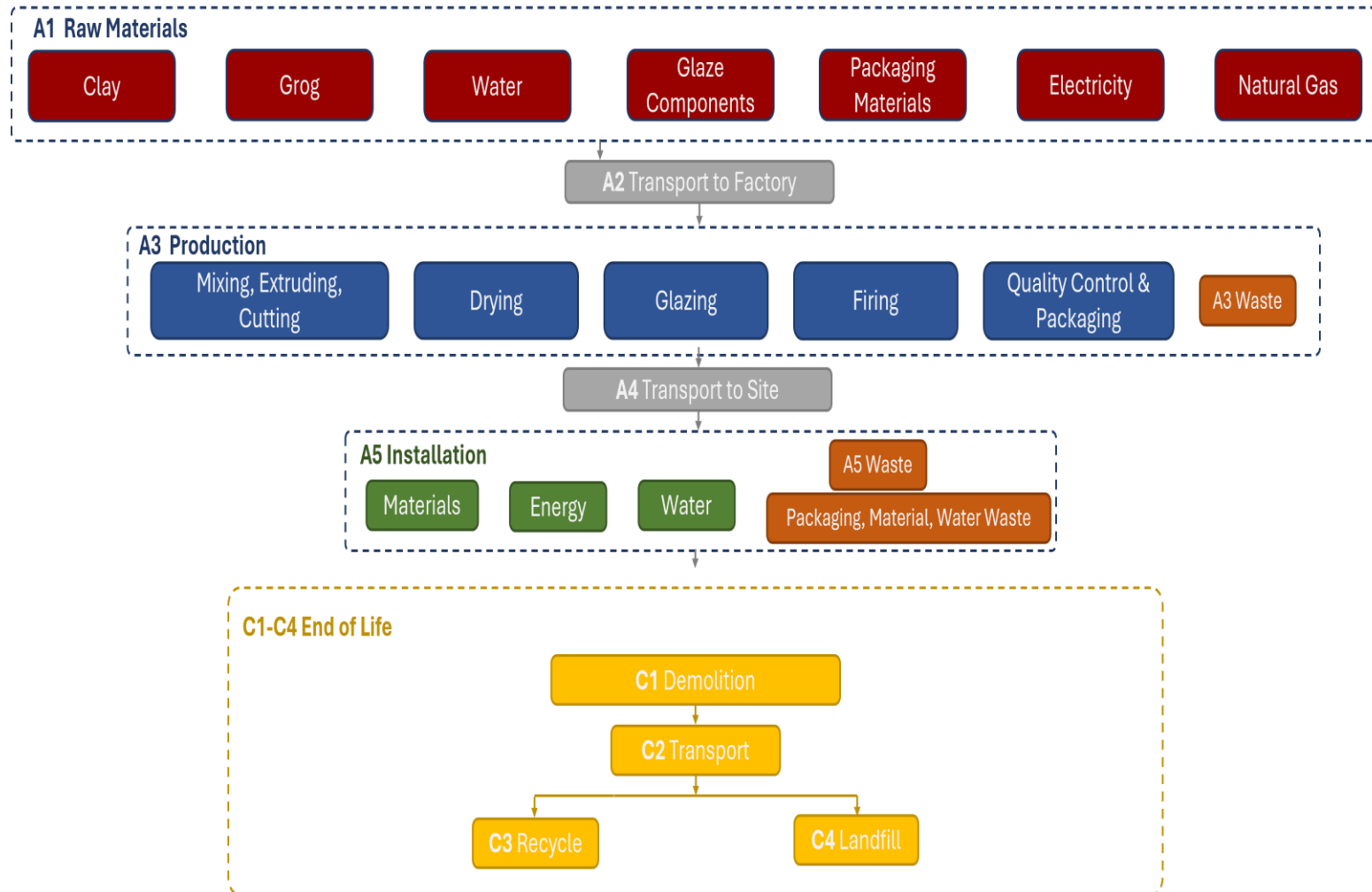
End-of-life is modeled as manual or mechanical demolition with low impacts.

Waste is sorted prior to disposal.

Ceramic tile and adhesive are treated as inert waste and sent to landfill with an assumed average 50 km transport distance.

No reuse or organized recycling is modeled; therefore Module D (benefits beyond the system boundary) is not credited.

MANUFACTURING PROCESS



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.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

This LCA study includes the provision of all materials, transportation, energy and emission flows, and end of life processing of product. All industrial processes from raw material acquisition and pre-processing, production, product distribution and installation and end-of-life management are included.

The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on

generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging material	Allocated by mass or volume
Ancillary materials	Not applicable
Manufacturing energy and waste	Allocated by mass or volume

All estimations and assumptions regarding the cut off criteria and the allocation are declared in the part "Cut-off Criteria except the estimations/assumptions below:

Proxy data is used for certain materials due to their unavailability in the database.

- Module A1: All materials are included.
- Module A2, A4 & C2: Vehicle capacity utilization volume factor is assumed to be 1 which means full load. It may vary but as the role of transportation emission in total results is small, the variety in load is assumed to be

negligible. To be conservative, empty returns are included in this study as implemented through an average load factor in the Ecoinvent transport datapoints.

- Module A4: Transportation does not cause losses as products are packaged properly. Also, volume capacity utilization factor is assumed to be 1 for the nested packaged products. Additionally, transportation distances are assumed based on a particular scenario of customer's premises in 1200 and a lorry is the assumed vehicle type used.
- Module A5: Packaging waste is declared as installation waste.
- Module C2: Transportation distance to waste handling facility is estimated as 50 km and the transportation method is assumed as lorry.
- Module C3, C4, D: The product undergoes separate collection and a certain percentage of each material is assumed to be recycled, incinerated and landfilled. The recycled end-of-life materials are assumed to serve as recycled aggregates or as backfilling materials.

PRODUCT & MANUFACTURING SITES GROUPING

Type of grouping	No grouping
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Grouping method	Not applicable
Variation in GWP-fossil for A1-A3, %	Not applicable

The results are representative for a group of very similar products with minor variations in proportion of ingredients.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator for EPD Hub - North America v1.1.4. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1/3.11/3.12, EPDs with TRACI methodologies, and the Federal LCA Commons as sources of environmental data. Allocation used in Ecoinvent 3.10.1/3.11/3.12 environmental data sources follow the methodology 'allocation, cut-off, EN 15804+A2'.

ENVIRONMENTAL IMPACT DATA

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

ENVIRONMENTAL IMPACTS – TRACI 2.1. / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	1.92E+00	2.98E+00	1.93E+00	6.83E+00	2.41E+00	3.48E+00	ND	ND	ND	ND	ND	ND	ND	2.79E-02	2.67E-01	0.00E+00	1.70E-01	-7.91E-01
Ozone Depletion	kg CFC-11e	6.93E-08	4.47E-08	3.55E-08	1.50E-07	3.60E-08	2.08E-08	ND	ND	ND	ND	ND	ND	ND	7.42E-09	4.03E-09	0.00E+00	5.33E-09	-1.77E-11
Acidification	kg SO ₂ e	1.38E-02	8.95E-03	5.55E-03	2.83E-02	7.21E-03	7.49E-03	ND	ND	ND	ND	ND	ND	ND	1.91E-04	1.40E-03	0.00E+00	1.12E-03	-1.16E-03
Eutrophication	kg Ne	2.05E-03	9.50E-04	7.33E-03	1.03E-02	7.66E-04	3.45E-03	ND	ND	ND	ND	ND	ND	ND	2.82E-06	1.23E-04	0.00E+00	1.24E-04	-7.96E-05
POCP ("smog")	kg O ₃ e	1.85E-01	2.23E-01	1.18E-01	5.27E-01	1.79E-01	1.58E-01	ND	ND	ND	ND	ND	ND	ND	8.40E-04	4.13E-02	0.00E+00	3.18E-02	-2.36E-02
ADP-fossil	MJ	2.35E+01	4.25E+01	2.25E+01	8.86E+01	3.42E+01	3.26E+01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	3.83E+00	0.00E+00	4.29E+00	-1.36E+00

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Renew. PER as energy ¹⁾	MJ	2.06E+00	5.82E-01	2.17E+01	2.43E+01	4.69E-01	-2.87E+01	ND	ND	ND	ND	ND	ND	ND	4.07E-02	5.22E-02	0.00E+00	4.13E-02	-5.13E-01
Renew. PER as material	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renew. PER	MJ	2.06E+00	5.82E-01	2.17E+01	2.43E+01	4.69E-01	-2.87E+01	ND	ND	ND	ND	ND	ND	ND	4.07E-02	5.22E-02	0.00E+00	4.13E-02	-5.13E-01
Non-re. PER as energy	MJ	2.41E+01	4.25E+01	2.77E+01	9.43E+01	3.42E+01	3.14E+01	ND	ND	ND	ND	ND	ND	ND	2.89E-01	3.83E+00	0.00E+00	4.28E+00	-1.08E+01
Non-re. PER as material	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of non-re. PER	MJ	2.41E+01	4.25E+01	2.77E+01	9.43E+01	3.42E+01	3.14E+01	ND	ND	ND	ND	ND	ND	ND	2.89E-01	3.83E+00	0.00E+00	4.28E+00	-1.08E+01
Secondary materials	kg	8.11E+00	1.90E-02	2.89E-01	8.42E+00	1.54E-02	8.44E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	1.71E-03	0.00E+00	1.08E-03	-7.63E-02
Renew. secondary fuels	MJ	3.43E-04	2.42E-04	5.02E-01	5.03E-01	1.96E-04	5.03E-02	ND	ND	ND	ND	ND	ND	ND	0.00E+00	2.18E-05	0.00E+00	2.23E-05	0.00E+00
Non-ren. secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m ³	4.33E-02	5.68E-03	1.71E-02	6.61E-02	4.53E-03	1.19E-02	ND	ND	ND	ND	ND	ND	ND	7.30E-05	5.05E-04	0.00E+00	4.45E-03	-1.54E-03

1) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste	kg	2.10E-01	7.39E-02	8.72E-02	3.71E-01	5.96E-02	4.61E-02	ND	ND	ND	ND	ND	ND	ND	0.00E+00	6.64E-03	0.00E+00	4.73E-03	-1.08E-08
Non-hazardous waste	kg	3.86E+01	1.38E+00	6.63E+00	4.66E+01	1.12E+00	1.47E+01	ND	ND	ND	ND	ND	ND	ND	1.04E-01	1.25E-01	0.00E+00	1.08E-01	-1.75E-02
Radioactive waste	kg	2.97E-05	8.47E-06	1.00E-05	4.82E-05	6.78E-06	5.81E-05	ND	ND	ND	ND	ND	ND	ND	8.54E-05	7.55E-07	0.00E+00	6.57E-07	-2.20E-04

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0.00E+00	0.00E+00	1.05E+00	1.05E+00	0.00E+00	1.05E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	kg	0.00E+00	0.00E+00	1.28E+00	1.28E+00	0.00E+00	1.28E-01	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy rec	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	ND	ND	ND	ND	ND	ND	ND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

SCENARIO DOCUMENTATION

DATA SOURCES

Manufacturing energy scenario documentation

1. Heat production, natural gas, at boiler modulating >100kW, World, Ecoinvent, 0.0746 kgCO₂e/MJ
2. Electricity - GAS - Griffith Energy, LLC, United States, LCA Commons, 0.30 kgCO₂e/MJ

Transport scenario documentation - A4 (Transport resources)

1. Market for transport, freight, lorry 16-32 metric ton, EURO5, 500 km

Installation at the building site (A5) - Scenario documentation

Scenario information	Value
Energy: type and consumption (MJ or kWh)	Electricity; at user; consumption mix - CAISO - FERC, LCA Commons, 0.1 kWh
Water use (m ³)	Market for tap water, Ecoinvent, 0.38 lbs
Ancillary materials: type and mass (kg)	1. Cement grout for delicate surfaces, GaBi, 1.0 lbs 2. Polymer modified cementitious thin-set powder mortar, GaBi, 9.0 lbs
Waste materials: type and mass (kg)	1. Treatment of waste paperboard, sanitary landfill, Ecoinvent, 1.49 lbs 2. Treatment of waste wood, untreated, sanitary landfill, Ecoinvent, 2.759 lbs 3. Treatment of waste plastic, mixture, sanitary landfill, Ecoinvent, 0.087 lbs 4. Treatment of inert waste, inert material landfill, Ecoinvent, 5.11236 lbs
Waste materials: output routes	Sanitary landfill
Direct emissions (kg)	Direct emission to air: Water, One Click LCA, 0.00609 cu ft

End of life (C1-C4) - Scenario documentation

Scenario information	Value
Collection process: collected separately (kg)	
Collection process: Mixed waste (kg)	
Recovery: re-use (kg)	0
Recovery: recycling (kg)	0
Recovery: energy recovery (kg)	0
Disposal (kg)	0
Scenario assumptions e.g. transportation (mode, km) & other	50 km by lorry

THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15804+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez

Tool verification validity: 27 March 2025 - 26 March 2028

Yazan Badour as an authorized verifier for EPD Hub Limited 23.04.2026

