

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

Intumescent Paint for Wood (HW System)



EPD HUB, HUB-1049

Publishing date 26 January 2024, last updated on 26 January 2024, valid until 26 January 2029.

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Envirograf
Address	Intumescent Systems Ltd, Envirograf House, Barfrestone, Dover, Kent, CT15 7JG, United Kingdom
Contact details	SALES@ENVIROGRAF.COM
Website	https://envirograf.com/

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.0, 1 Feb 2022
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with modules C1-C4, D
EPD author	Sam McGarrick (Blue Marble Environmental Partnerships Ltd.)
EPD verification	Independent verification of this EPD and data, according to ISO 14025: Internal certification External verification
EPD verifier	Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited

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 EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	Intumescent Paint for Wood (HW System)
Additional labels	-
Product reference	-
Place of production	Dover, UK
Period for data	Calendar year - 2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	- %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 Litre of Intumescent Paint
Declared unit mass	0.91 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	2.94E+00
GWP-total, A1-A3 (kgCO ₂ e)	2.78E+00
Secondary material, inputs (%)	2.19
Secondary material, outputs (%)	23.4
Total energy use, A1-A3 (kWh)	10.9
Total water use, A1-A3 (m ³ e)	4.70E-02

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

The Envirograf[®] brand was established in 1983 and it quickly evolved to become a leading force in passive fire products. Its reputation as innovator and developer of passive fire products is widely recognised, and its commitment to product research and development is second to none.

Envirograf[®] passive fire products carry the hallmark of excellence, reflecting the high standards that prevail in its laboratory, test rig, and manufacturing plant. Envirograf[®] passive fire products are subject to rigorous quality control which, at all stages, ensures products remain at the leading edge of fire containment technology. This quality has earned the company and its passive fire products a high reputation, with its operating system being accredited to ISO9001.

When it comes to passive fire protection, every risk must be considered to ensure that loss of life and loss of property are kept to a minimum. While many people are aware of the importance of fire barriers in preventing or delaying the spread of fire, they do not always consider the effects of breaching the fire barrier, perhaps to allow electrical wires or other services to pass through. That is why a range of Envirograf[®] intumescent products has been designed, to safeguard the integrity of fire barriers, whether they are ceilings, floors, roofs, or walls.

PRODUCT DESCRIPTION

The HW product system is comprised of 1) a primer, 2) an intumescent coat and 3) a top coat.

The results are for the HW System and include the following paints:

HWAP/WB Primer (Water-based Primer)

HWAP adhesion primer is a water-based clear primer to apply over existing painted or varnished surfaces before applying other coatings.

HW01 (White water-based intumescent coating)

The HW01 is a water-based system that offers a white and coloured fireproof coating; for upgrading new and already coated timber and wood related surfaces.

HW02N (Clear water-based intumescent coating)

The HW02N is a water-based system that offers a clear, fire proof coating, for upgrading new and already coated timber and wood related surfaces.

HW Enviro Clear (Clear water-based top coat)

HW Enviro Clear/White is a specially formulated, quick drying, water based protective top coating for INTERNAL smooth hardwood and softwood surfaces. Comes in 3 different finishes - matt, satin and gloss.

HW Premier White (White water-based top coat)

A water-based product to apply over HW01 no need for an undercoat. Available in matt, satin or gloss finishes. For internal use only

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

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	-	-
Minerals	65	Global
Fossil materials	35	Global
Bio-based materials	-	-

BIOGENIC CARBON CONTENT

Biogenic carbon content in product, kg C	-
Biogenic carbon content in packaging, kg C	0.04

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Litre of Intumescent Paint
Mass per declared unit	0.91 kg
Functional unit	-
Reference service life	-

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

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	MND	MND	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x	
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstr./demol.	Transport	Waste processing	Disposal	Reuse	Recovery
																	Recycling

Modules not declared = MND. 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.

The paints comprise various ingredients with the exact combination of ingredients dependent on the paint produced. A high-low percentage range per ingredient was provided an an average taken to represent the composition of each paint. A sensitivity analysis was then conducted, and where any ingredient had a greater influence over the results, the most conservative position was taken. In some cases, stoichiometry was applied to model the ingredients as no data existed in the Ecolnvent database.

The HW System comprises three main layers: 1) Primer, 2) Intumescent Coat and 3) Top Coat. The ratio between the layers is based on dosing rates specified by Envirograf. The declared unit of 1 litre of intumescent paint

therefore accounts for the quantities of the paints required to give effect to the HW System (Intumescent Paint for Wood). (A1)

The ingredients are procured internationally and very accurate transportation data to Envirograf manufacturing facilities per ingredient has been modelled. Road transport is by >32 tonne lorry and sea transport via container ship (A2).

Paints are mixed at Envirograf facilities in the UK and accurate data on mix time and machine use was provided to calculate kWh per litre of paint. The energy source is electricity from the UK grid. No manufacturing losses are reported (A3).

Finally, the product is packaged in a steel tin and cardboard box (A3).

TRANSPORT AND INSTALLATION (A4-A5)

This EPD does not cover the construction phase.

PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase.

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

PRODUCT END OF LIFE (C1-c4, D)

At the end-of-life, in the demolition phase, 100% of the waste is assumed to be collected as mixed waste. The consumption of energy and natural resources is negligible for disassembling of the end-of-life product since the paint becomes a part of another product. So, the impacts of demolition are assumed to be zero (C1).

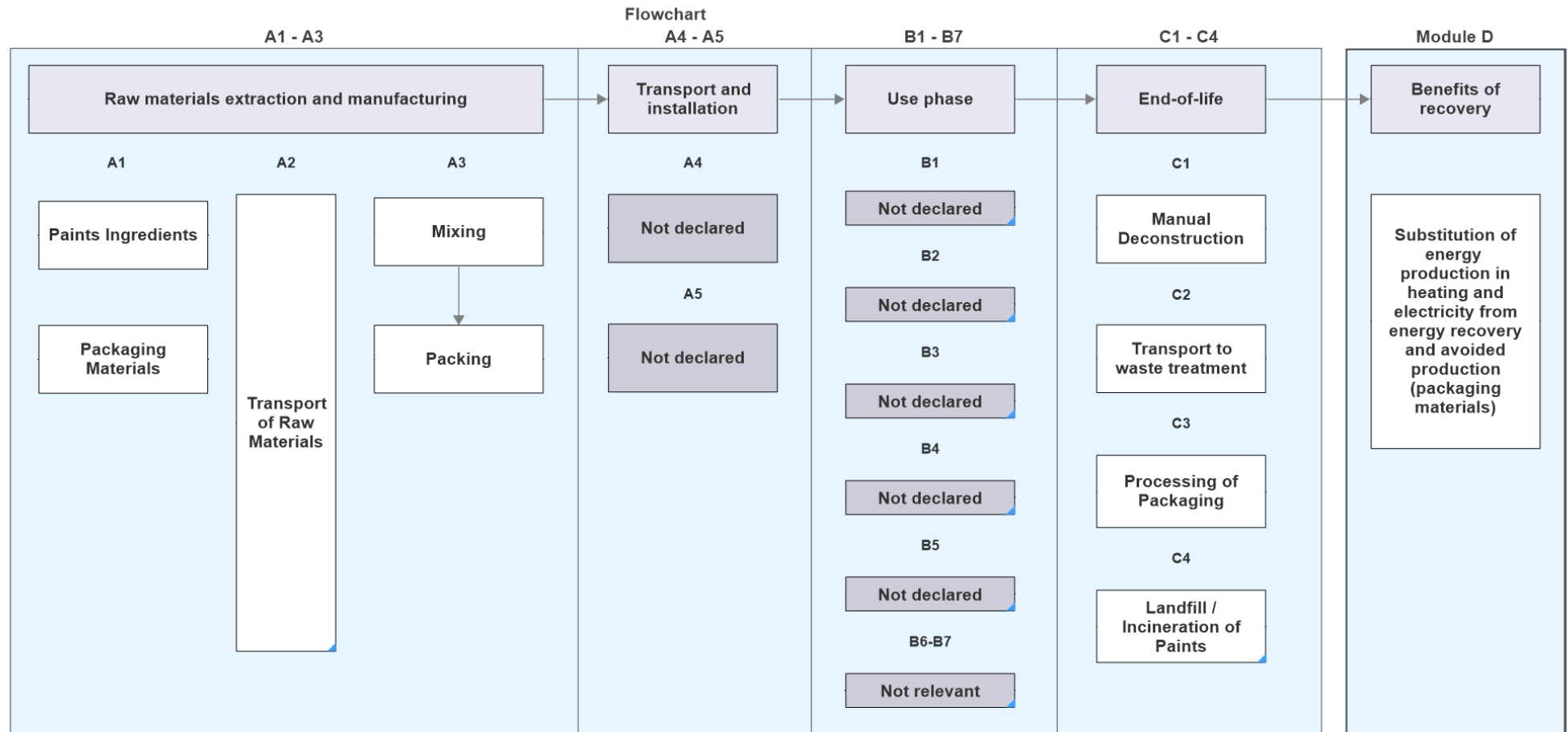
The dismantled structure on which the paint is applied to is delivered to the nearest construction waste treatment plant, conservatively a distance of 85km has been set (C2).

As the declared unit is 1 litre of intumescent paint, the application of the paint including water evaporation on drying is not included in this EPD. Therefore the waste treatment scenarios are considered for the entire product. The paint on 70% of structure going to incineration is considered in final disposal as incineration without energy recovery as the heating value of dried paint is negligible. The remaining 30% of product is taken to landfill for final disposal (C4).

In this EPD, packaging waste has been modelled with product end-of-life. The steel tin can is assumed to be recycled at a rate of 85%, with the remaining 15% reaching landfill. Cardboard packaging is assumed to be 100% recycled. (C3/C4).

The heating value of paint is assumed negligible and accordingly, no benefits are included. Benefits and loads from steel and cardboard packaging recycling are included. (D).

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.

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 materials	No allocation
Ancillary materials	No allocation
Manufacturing energy and waste	No allocation

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	- %

There is no average result considered in this study since this EPD refers to the HW System at the dosing rates specified by Envirograf.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. Ecoinvent v3.8 and One Click LCA databases were used as sources of environmental data.



ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP total ¹⁾	kg CO ₂ e	2.07E+00	7.15E-02	6.40E-01	2.78E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	8.74E-03	1.51E-01	2.29E+00	-5.97E-02
GWP fossil	kg CO ₂ e	2.08E+00	7.15E-02	7.85E-01	2.94E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	8.74E-03	4.64E-03	2.28E+00	-5.97E-02
GWP biogenic	kg CO ₂ e	-1.43E-02	0.00E+00	-1.46E-01	-1.61E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	1.47E-01	1.41E-02	0.00E+00
GWP LULUC	kg CO ₂ e	1.52E-03	3.09E-05	1.29E-03	2.84E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.40E-06	5.33E-06	1.00E-04	5.20E-05
Ozone depletion pot.	kg CFC ₁₁ e	1.92E-07	1.65E-08	4.26E-08	2.51E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.06E-09	3.74E-10	1.61E-07	-4.70E-09
Acidification potential	mol H ⁺ e	1.20E-02	5.03E-04	4.38E-03	1.68E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.85E-05	4.22E-05	2.12E-03	-3.75E-04
EP-freshwater ²⁾	kg Pe	6.01E-05	5.60E-07	3.27E-05	9.33E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	7.41E-08	2.02E-07	2.24E-06	-1.58E-06
EP-marine	kg Ne	1.78E-03	1.18E-04	8.87E-04	2.78E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	6.26E-06	9.44E-06	3.21E-04	-9.98E-05
EP-terrestrial	mol Ne	1.92E-02	1.32E-03	8.72E-03	2.92E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	6.94E-05	1.03E-04	3.61E-03	-1.13E-03
h \ # h ³⁾	kg NMVOce	6.39E-03	4.04E-04	2.63E-03	9.42E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.69E-05	2.99E-05	1.18E-03	-2.86E-04
ADP-minerals & metals ⁴⁾	kg Sbe	3.36E-05	1.64E-07	1.89E-05	5.26E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.13E-08	3.68E-07	1.28E-06	-2.27E-07
ADP-fossil resources	MJ	3.37E+01	1.09E+00	9.10E+00	4.39E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.37E-01	5.06E-02	9.92E+00	-5.33E-01
Water use ⁵⁾	m ³ e depr.	1.52E+00	4.70E-03	2.80E-01	1.81E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	6.11E-04	1.07E-03	4.37E-02	-1.55E-02

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO₄e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Particulate matter	Incidence	1.08E-07	7.37E-09	6.19E-08	1.77E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	9.94E-10	1.29E-09	1.89E-08	-7.30E-09
Ionizing radiation ⁶⁾	kBq U235e	9.68E-02	5.20E-03	6.47E-02	1.67E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	6.55E-04	4.82E-04	4.56E-02	5.87E-03
Ecotoxicity (freshwater)	CTUe	5.87E+01	9.41E-01	2.40E+01	8.36E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.22E-01	6.19E-01	9.79E+00	-1.38E+00
Human toxicity, cancer	CTUh	1.17E-09	2.68E-11	1.53E-08	1.65E-08	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.98E-12	1.40E-11	4.40E-09	-3.36E-11
Human tox. non-cancer	CTUh	6.33E-08	8.82E-10	1.84E-08	8.26E-08	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.17E-10	2.83E-10	7.91E-09	-7.78E-10
SQP ⁷⁾	-	1.11E+01	1.14E+00	7.91E+00	2.01E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.57E-01	7.96E-02	1.49E+00	-3.82E+00

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator; 7) SQP = Land use related impacts/soil quality.

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 ⁸⁾	MJ	1.41E+00	1.18E-02	2.64E+00	4.06E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.54E-03	7.70E-03	5.99E-02	-6.96E-01
Renew. PER as material	MJ	4.71E-02	0.00E+00	1.28E+00	1.32E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	1.28E+00	-4.71E-02	3.16E-01
Total use of renew. PER	MJ	1.46E+00	1.18E-02	3.91E+00	5.38E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.54E-03	1.27E+00	1.29E-02	-3.80E-01
Non-re. PER as energy	MJ	2.50E+01	1.09E+00	9.09E+00	3.52E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.37E-01	5.06E-02	9.92E+00	-5.23E-01
Non-re. PER as material	MJ	8.71E+00	0.00E+00	1.04E-02	8.72E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	-1.04E-02	8.71E+00	-1.04E-02
Total use of non-re. PER	MJ	3.37E+01	1.09E+00	9.10E+00	4.39E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.37E-01	4.03E-02	1.21E+00	-5.34E-01
Secondary materials	kg	1.99E-02	3.23E-04	1.75E-01	1.95E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.79E-05	8.91E-05	3.70E-03	1.11E-02
Renew. secondary fuels	MJ	2.81E-04	2.87E-06	7.27E-03	7.55E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.83E-07	2.15E-06	8.15E-06	1.73E-03
Non-ren. secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m ³	3.86E-02	1.33E-04	8.25E-03	4.70E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.77E-05	3.01E-05	1.16E-03	-2.59E-04

8) 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	2.60E-01	1.44E-03	6.68E-01	9.29E-01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.80E-04	4.73E-04	6.37E-01	-5.32E-03
Non-hazardous waste	kg	6.76E+00	2.24E-02	1.29E+00	8.07E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.96E-03	1.05E-02	2.93E-01	-1.60E-02
Radioactive waste	kg	4.73E-05	7.39E-06	2.38E-05	7.85E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	9.22E-07	2.37E-07	0.00E+00	1.78E-07

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	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	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	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	2.13E-01	0.00E+00	0.00E+00
Materials for energy rec	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	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	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

ENVIRONMENTAL IMPACTS EN 15804+A1, CML / 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	2.01E+00	7.08E-02	7.73E-01	2.85E+00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	8.65E-03	6.78E-03	2.27E+00	-5.74E-02
Ozone depletion Pot.	kg CFC ₁₁ e	1.74E-07	1.30E-08	3.69E-08	2.24E-07	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.63E-09	3.07E-10	1.28E-07	-3.74E-09
Acidification	kg SO ₂ e	1.01E-02	4.05E-04	3.59E-03	1.41E-02	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.31E-05	3.39E-05	1.78E-03	-2.73E-04
Eutrophication	kg PO ₄ ³ e	4.92E-03	6.27E-05	1.37E-03	6.36E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	5.05E-06	3.33E-05	1.47E-03	-6.75E-05
h \ # h	kg C ₂ H ₄ e	8.32E-04	1.38E-05	1.84E-04	1.03E-03	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.06E-06	2.73E-06	7.45E-05	-1.39E-05
ADP-elements	kg Sbe	3.14E-05	1.60E-07	1.87E-05	5.03E-05	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.07E-08	3.68E-07	1.20E-06	-1.28E-07
ADP-fossil	MJ	3.37E+01	1.09E+00	9.09E+00	4.39E+01	MND	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.37E-01	5.06E-02	9.92E+00	-5.20E-01

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliancy with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

This Environmental Product Declaration
The Life-Cycle Assessment used in this EPD
The digital background data for this EPD

Why does verification transparency matter? Read more online
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THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited
26.01.2024

