



ENVIRONMENTAL PRODUCT DECLARATION

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

Timber Balustrades for Landings
Staircraft Group Ltd



EPD HUB, HUB-0869

Publishing date 24 November 2023, last updated on 24 November 2023, valid until 24 November 2028.

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Staircraft Group Ltd
Address	Colliery Lane North, Bayton Road Industrial Estate, Exhall
Contact details	ben.humphries@staircraftgroup.com
Website	https://staircraftgroup.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	Manufactured product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	Ben Humphries, Environmental & Sustainability Analyst at Staircraft
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> 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	Timber Balustrades for Landings
Additional labels	Timber landing balustrades with and without extra newel posts
Product reference	2.7m landing balustrade (with no additional newel posts)
Place of production	Coventry & West Bromwich, UK
Period for data	01/06/21 - 31/05/22
Averaging in EPD	Multiple products
Variation in GWP-fossil for A1-A3	0% to +49.795 %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 kg of landing balustrade with no extra newel posts
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	3.22E-01
GWP-total, A1-A3 (kgCO ₂ e)	-5.42E-01
Secondary material, inputs (%)	0.0309
Secondary material, outputs (%)	0.0
Total energy use, A1-A3 (kWh)	8.46
Total water use, A1-A3 (m ³ e)	3.28E-02

Note:

The declared unit was chosen as 1kg to enable the LCA data established for the fixed size of representative balustrade chosen in this EPD to be scaled to suit landing balustrades with alternative geometries and those which include additional newel posts.

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Staircraft are the world's largest manufacturer of timber staircases, as well as supplying integrated timber floor and door-kit solutions to the UK residential housing sector. We operate from 4 manufacturing sites in the Midlands, covering over 405 000 sq. ft.

Our team are passionate about innovation and sustainability. Using the latest CNC technology our products are designed to minimise waste, and create efficient, hassle-free and safe solutions for tradespeople to install.

PRODUCT DESCRIPTION

This EPD covers domestic landing balustrades comprising a timber handrail with MDF spindles and baserail components, all painted with 2 coats of white primer. There are countless variations in the length and design of this product depending on the space available and the clients specifications, so every product is bespoke.

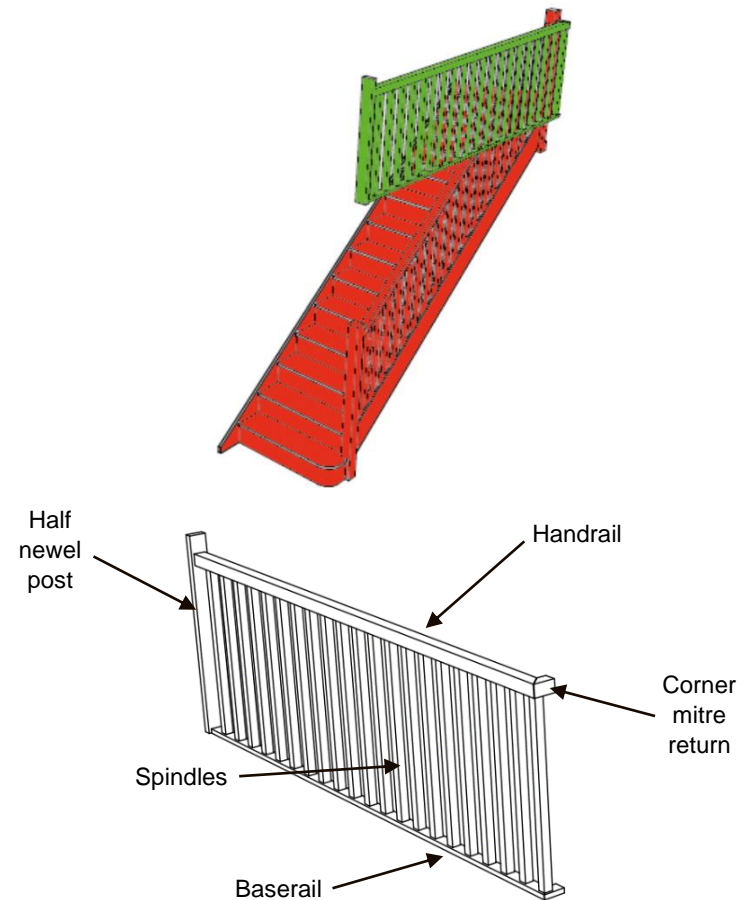
The landing balustrade we most commonly manufacture is approximately 2700mm long with no newel posts other than a half thickness post fixed to the wall where the balustrade terminates. LCA parameters for this Balustrade are provided in this EPD on a per kg basis.

The illustrations opposite show the structure of a typical pre-assembled landing balustrade (Highlighted green), and its application when positioned at the top of (and attached to) an adjacent stair structure (Highlighted red). Note that LCA parameters for timber stairs and their associated rake balustrades (Highlighted red) manufactured by Staircraft Group Ltd, are covered in a separate EPD number HUB-0834 published by the EPD Hub.

The most common variations to the type of landing balustrade shown opposite are those whose length warrants an extra intermediate newel post, or whose return into an adjacent staircase or wall is sufficiently long to warrant a further newel post at the corner of the landing. The primary LCA parameters for these alternative landing balustrade configurations, incorporating either one or two extra newel posts, are included in the Annex to this EPD on a per kg basis, along with example illustrations.

Because the declared unit used in this EPD has been chosen on a per kg of balustrade basis, the resulting LCA parameters can therefore be scaled to suit landing balustrades of any size or configuration simply by knowing their weight and whether additional newel posts are present.

Comprehensive further information can be found on our timber balustrades, as well as other products we manufacture, at <https://staircraftgroup.com>



PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass - %	Material origin
Metals	0.327	UK
Minerals	-	-
Fossil materials	-	-
Bio-based materials	99.673	EU, South America or Asia

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0.26
Biogenic carbon content in packaging, kg C	0

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 kg of landing balustrade with no extra newel posts
Mass per declared unit	1 kg
Functional unit	1 kg of landing balustrade with no extra newel posts
Reference service life	60 years

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	x	x	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	Deconstruction/demolition	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 this product stage cover the extraction, manufacture and transport of raw materials used in the production process, as well as packaging materials and other ancillary materials used. 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.

Our manufacturing process is summarised in the flowchart overleaf. The balustrades are manufactured from a combination of MDF sourced from UK and Ireland, and timber sourced from South America or Asia. These materials are then processed into balustrade components (handrails, spindles, baserails etc...) using an automated moulding and painting line to ensure accuracy, consistency and quality, before being assembled into finished stair assemblies in our factories on 2 separate sites. Waste minimisation is an integral part of the process, and any waste generated is

either recycled into our own biomass facility or recycled by external contractors, with a small minority going to landfill.

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.

Both our stair factories deliver their products direct to construction sites using a mixture of vehicle sizes/types depending upon available site access, and delivery date requirements. Vehicle types and delivery routes are chosen to optimise load size, fuel efficiency and mileage travelled. Site installation (A5) can be carried out using a handheld rechargeable drill.

PRODUCT USE AND MAINTENANCE (B1-B7)

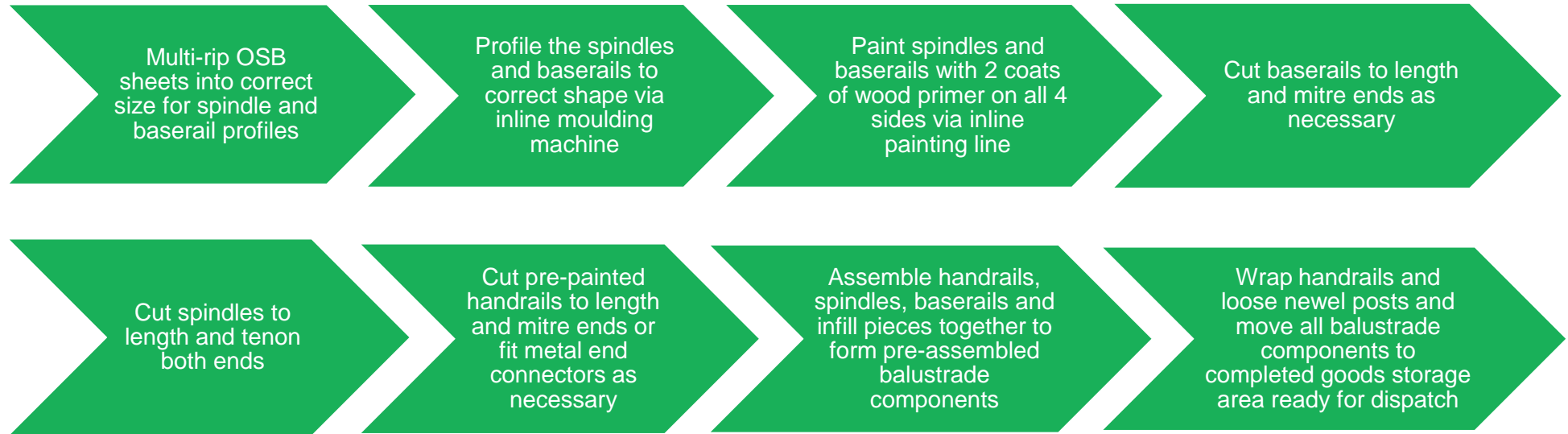
This EPD does not cover the use phase.

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

PRODUCT END OF LIFE (C1-C4, D)

Our Landing Balustrades are installed in domestic properties where the end-of-life process for demolition and waste removal/recycling is either unclear or unknown. In this EPD we have therefore assumed a worst-case scenario for this product stage whereby the products are sent to landfill at the end-of-life.

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	Allocated by mass or volume
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Type of average	Multiple products
Averaging method	Representative product
Variation in GWP-fossil for A1-A3	0% to +49.795 %

This EPD is based on a representative product with the highest sales volume. The variation for GWP Fossil for A1 - A3 for the product variants included in the Annex are +24.16% and +49.795% respectively.

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

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	-7.67E-01	9.11E-03	2.15E-01	-5.42E-01	5.16E-05	2.79E-04	MND	MND	MND	MND	MND	MND	MND	0.00E+00	4.89E-03	0.00E+00	9.16E-01	0.00E+00
GWP – fossil	kg CO ₂ e	1.51E-01	9.11E-03	1.62E-01	3.22E-01	5.16E-05	2.25E-04	MND	MND	MND	MND	MND	MND	MND	0.00E+00	4.89E-03	0.00E+00	1.08E-02	0.00E+00
GWP – biogenic	kg CO ₂ e	-9.59E-01	0.00E+00	5.36E-02	-9.05E-01	0.00E+00	5.35E-05	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	9.05E-01	0.00E+00
GWP – LULUC	kg CO ₂ e	4.14E-02	3.60E-06	4.90E-05	4.14E-02	2.44E-08	1.82E-08	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.95E-06	0.00E+00	1.12E-05	0.00E+00
Ozone depletion pot.	kg CFC ₁₁ e	6.26E-08	2.12E-09	1.64E-08	8.12E-08	1.17E-11	5.75E-12	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.13E-09	0.00E+00	3.21E-09	0.00E+00
Acidification potential	mol H ⁺ e	3.96E-03	6.33E-05	8.68E-04	4.89E-03	1.48E-07	1.54E-07	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.39E-05	0.00E+00	9.15E-05	0.00E+00
EP-freshwater ²⁾	kg Pe	4.54E-07	6.42E-08	2.18E-06	2.70E-06	4.23E-10	2.97E-10	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.49E-08	0.00E+00	2.10E-07	0.00E+00
EP-marine	kg Ne	1.07E-03	2.42E-05	1.79E-04	1.27E-03	2.85E-08	8.92E-08	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.77E-06	0.00E+00	6.00E-05	0.00E+00
EP-terrestrial	mol Ne	1.36E-02	2.66E-04	2.96E-03	1.69E-02	3.18E-07	5.62E-07	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.08E-05	0.00E+00	3.39E-04	0.00E+00
POCP (“smog”) ³⁾	kg NMVOCe	3.96E-03	7.32E-05	5.55E-04	4.58E-03	1.23E-07	2.12E-07	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.18E-05	0.00E+00	1.21E-04	0.00E+00
ADP-minerals & metals ⁴⁾	kg Sbe	5.71E-06	3.21E-08	3.12E-08	5.78E-06	2.36E-10	6.41E-11	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.77E-08	0.00E+00	4.59E-08	0.00E+00
ADP-fossil resources	MJ	8.14E+00	1.36E-01	2.33E-01	8.51E+00	7.65E-04	4.30E-04	MND	MND	MND	MND	MND	MND	MND	0.00E+00	7.27E-02	0.00E+00	2.46E-01	0.00E+00
Water use ⁵⁾	m ³ e depr.	4.59E-01	6.26E-04	1.63E-01	6.22E-01	4.00E-06	2.49E-06	MND	MND	MND	MND	MND	MND	MND	0.00E+00	3.40E-04	0.00E+00	1.49E-03	0.00E+00

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.

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	1.68E+01	1.93E-03	1.29E+00	1.81E+01	1.30E-05	7.55E-06	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.06E-03	0.00E+00	4.70E-03	0.00E+00
Renew. PER as material	MJ	8.23E+00	0.00E+00	-7.00E-01	7.53E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	-7.53E+00	0.00E+00
Total use of renew. PER	MJ	2.50E+01	1.93E-03	5.92E-01	2.56E+01	1.30E-05	7.55E-06	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.06E-03	0.00E+00	-7.52E+00	0.00E+00
Non-re. PER as energy	MJ	8.83E+00	1.36E-01	3.43E+00	1.24E+01	7.65E-04	4.30E-04	MND	MND	MND	MND	MND	MND	MND	0.00E+00	7.27E-02	0.00E+00	2.46E-01	0.00E+00
Non-re. PER as material	MJ	6.43E-01	0.00E+00	4.25E-02	6.86E-01	0.00E+00	-6.33E-02	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	-6.22E-01	0.00E+00
Total use of non-re. PER	MJ	9.48E+00	1.36E-01	3.47E+00	1.31E+01	7.65E-04	-6.29E-02	MND	MND	MND	MND	MND	MND	MND	0.00E+00	7.27E-02	0.00E+00	-3.76E-01	0.00E+00
Secondary materials	kg	3.09E-04	4.54E-05	6.52E-05	4.20E-04	3.11E-07	1.48E-07	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.48E-05	0.00E+00	8.88E-05	0.00E+00
Renew. secondary fuels	MJ	3.30E-06	4.97E-07	7.28E-05	7.66E-05	3.54E-09	5.21E-09	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.72E-07	0.00E+00	3.42E-06	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	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	3.12E-02	1.70E-05	1.62E-03	3.28E-02	1.08E-07	4.01E-07	MND	MND	MND	MND	MND	MND	MND	0.00E+00	9.27E-06	0.00E+00	2.63E-04	0.00E+00

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	1.49E-03	1.53E-04	3.81E-03	5.45E-03	9.93E-07	8.35E-08	MND	MND	MND	MND	MND	MND	MND	0.00E+00	8.27E-05	0.00E+00	7.76E-06	0.00E+00
Non-hazardous waste	kg	1.76E-01	2.70E-03	9.36E-02	2.72E-01	1.79E-05	1.49E-03	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.47E-03	0.00E+00	9.97E-01	0.00E+00
Radioactive waste	kg	3.96E-05	9.38E-07	2.32E-05	6.37E-05	5.22E-09	4.22E-10	MND	MND	MND	MND	MND	MND	MND	0.00E+00	5.01E-07	0.00E+00	4.45E-09	0.00E+00

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	1.40E-02	1.40E-02	0.00E+00	0.00E+00	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	3.38E-04	0.00E+00	4.48E-02	4.51E-02	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy rec	kg	1.17E-02	0.00E+00	0.00E+00	1.17E-02	0.00E+00	0.00E+00	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	0.00E+00	0.00E+00	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	2.41E-02	9.03E-03	1.61E-01	1.95E-01	5.11E-05	1.84E-04	MND	MND	MND	MND	MND	MND	MND	0.00E+00	4.84E-03	0.00E+00	7.52E-02	0.00E+00
Ozone depletion Pot.	kg CFC-11e	7.10E-10	1.68E-09	1.32E-08	1.56E-08	9.31E-12	4.56E-12	MND	MND	MND	MND	MND	MND	MND	0.00E+00	8.97E-10	0.00E+00	2.55E-09	0.00E+00
Acidification	kg SO ₂ e	6.93E-05	4.67E-05	6.05E-04	7.21E-04	1.22E-07	1.17E-07	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.14E-05	0.00E+00	6.95E-05	0.00E+00
Eutrophication	kg PO ₄ ³ e	2.71E-05	1.09E-05	1.51E-04	1.89E-04	2.75E-08	8.32E-06	MND	MND	MND	MND	MND	MND	MND	0.00E+00	2.46E-06	0.00E+00	2.87E-03	0.00E+00
POCP ("smog")	kg C ₂ H ₄ e	7.43E-06	1.40E-06	2.88E-05	3.76E-05	6.23E-09	3.31E-08	MND	MND	MND	MND	MND	MND	MND	0.00E+00	5.75E-07	0.00E+00	1.67E-05	0.00E+00
ADP-elements	kg Sbe	2.85E-07	3.13E-08	2.54E-06	2.86E-06	2.31E-10	6.19E-11	MND	MND	MND	MND	MND	MND	MND	0.00E+00	1.73E-08	0.00E+00	4.47E-08	0.00E+00
ADP-fossil	MJ	1.20E+00	1.36E-01	3.49E+00	4.83E+00	7.65E-04	4.30E-04	MND	MND	MND	MND	MND	MND	MND	0.00E+00	7.27E-02	0.00E+00	2.46E-01	0.00E+00

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 compliance 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.

This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

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

24.11.2023



Annex

The LCA parameters of primary importance to specifiers for the most common landing balustrade variants to the reference balustrade included in the body of this EPD, are given in the table below on a per kg basis, along with example illustrations of each balustrade type:

Landing Balustrade Type	GWP-Total (kg CO2e per kg)			GWP-Fossil (kg CO2e per kg)
	Cradle to Gate A1-A3	Cradle to Installation A1-A5	Cradle to Grave A1-C4	A1-A3
With no Newel post <i>(EPD reference balustrade)</i>	-0.542	-0.542	0.379	0.322
With 1 Newel post	-0.623	-0.623	0.409	0.358
With 2 Newel posts	-0.691	-0.691	0.433	0.385

