



ENVIRONMENTAL PRODUCT DECLARATION

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

Timber Staircases with Balustrades Staircraft Group Ltd



EPD HUB, HUB-0834

Publishing date 10 November 2023, last updated date 10 November 2023, valid until 10 November 2028

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Staircraft Group Ltd
Address	Colliery Lane North, Bayton Road Industrial Estate, Exhall, Coventry, CV7 9NW
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, 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	Anastasia Sipari, 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 staircases
Additional labels	Straight & winder staircases for domestic applications (see annex)
Product reference	Reference stair = 'Straight - LHWS – 2587FFL'
Place of production	Coventry & West Bromwich, UK
Period for data	01/06/21 - 31/05/22
Averaging in EPD	Multiple products and multiple factories
Variation in GWP-fossil for A1-A3	-9.5% to +49.8%

ENVIRONMENTAL DATA SUMMARY

Declared unit	1kg
Declared unit mass	1kg
GWP-fossil, A1-A3 (kgCO ₂ e)	6.34E-1
GWP-total, A1-A3 (kgCO ₂ e)	-4.86E-1
Secondary material, inputs (%)	0.0173
Secondary material, outputs (%)	0.0
Total energy use, A1-A3 (kWh)	9.0
Total water use, A1-A3 (m ³ e)	3.37E-2

Note:

The declared unit was chosen as 1kg to enable the LCA data established for the fixed sizes of representative stair chosen in this EPD to be scaled to suit other stairs of the same type, but with alternative geometries.

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

Domestic timber stairs and balustrades comprising timber and MDF components with some metal fixings are the subject of this EPD. There are countless variations in size and configuration of this product depending on the space available for the stair and the clients specifications, so every product is bespoke.

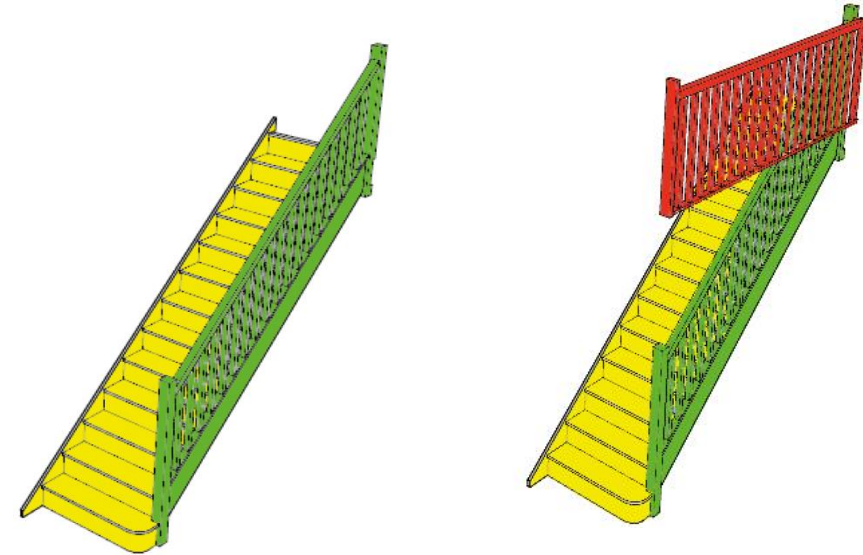
The stair type we most commonly manufacture is a straight stair flight with MDF strings on both sides and a timber balustrade on one side – illustrated opposite, and noting that it (and any of its variants) generally comprise 2 elements:

- The Stair Structure (Highlighted yellow).
- The Stair Balustrade (Highlighted green).

Note that landing balustrades (Highlighted red) are excluded from this EPD because they may or may not exist, and their lengths can vary dramatically. These will be covered in a separate EPD.

This reference stair has the following product reference:
"STRAIGHT - LHWS – 2587FFL(MDF string)"

LCA parameters for this stair are provided in this EPD on a per kg basis.



The most common variants to this stair, representing the alternative stair design types, are listed below, and the primary LCA parameters for these alternative stair types (including their associated balustrades) and images of such are also included in this EPD on a per kg basis - in the Annex :

1. STRAIGHT - LHWS – 2587FFL (Timber string)
2. 3 KITE TOP WINDER - LHWS – 2587FFL
3. 3 KITE BOTTOM WINDER – LHWS – 2587FFL
4. 3 KITE TOP & BOTTOM – LHWS – 2587FFL
5. 6 KITE MID WINDER - LHWS – 2587FFL
6. 4 KITE TOP WINDER -LHWS -2587FFL
7. 4 KITE BOTTOM WINDER – LHWS – 2587FFL
8. 4 KITE TOP & BOTTOM WINDER – LHWS – 2587FFL
9. 8 KITE MID WINDER – LHWS – 2587FFL

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

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	1	UK
Minerals		
Fossil materials		
Bio-based materials	99	EU, South America or Asia

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0.32
Biogenic carbon content in packaging, kg C	0

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1kg
Mass per declared unit	1kg
Functional unit	1kg of a Straight MDF Flight
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 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.

The stairs and 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 stair components (strings, treads, risers etc...) using 5 axis CNC routing/cutting machines 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 incurred from the delivery of finished products to construction sites (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 handheld equipment and a handheld rechargeable drill.

PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover this use phase. Air, soil, and water impacts during this use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

Our stairs 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 and multiple factories
Averaging method	Representative product
Variation in GWP-fossil for A1-A3	-9.5% to +49.8%

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 ranges between +49.8% and -9.5%

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 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	-6.81E-01	5.38E-03	1.90E-01	-4.86E-01	7.76E-04	5.65E-05	MND	MND	MND	MND	MND	MND	MND	3.31E-03	2.82E-03	0.00E+00	1.13E+00	0.00E+00
GWP – fossil	kg CO ₂ e	5.09E-01	5.37E-03	1.19E-01	6.34E-01	7.75E-04	4.45E-05	MND	MND	MND	MND	MND	MND	MND	3.31E-03	2.81E-03	0.00E+00	1.08E-02	0.00E+00
GWP – biogenic	kg CO ₂ e	-1.19E+00	0.00E+00	7.03E-02	1.12E+00	0.00E+00	1.20E-05	MND	MND	MND	MND	MND	MND	MND	6.06E-07	0.00E+00	0.00E+00	1.12E+00	0.00E+00
GWP – LULUC	kg CO ₂ e	1.33E-03	3.15E-06	3.32E-05	1.36E-03	3.35E-07	3.36E-09	MND	MND	MND	MND	MND	MND	MND	3.30E-07	1.04E-06	0.00E+00	1.11E-05	0.00E+00
Ozone depletion pot.	kg CFC _{11e}	6.35E-08	1.25E-09	1.49E-08	7.96E-08	1.79E-10	9.63E-13	MND	MND	MND	MND	MND	MND	MND	7.07E-10	6.48E-10	0.00E+00	3.21E-09	0.00E+00
Acidification potential	mol H ⁺ e	4.02E-03	4.02E-05	6.21E-04	4.68E-03	4.11E-06	2.74E-08	MND	MND	MND	MND	MND	MND	MND	3.44E-05	1.19E-05	0.00E+00	9.07E-05	0.00E+00
EP-freshwater ²⁾	kg Pe	3.56E-07	3.78E-08	1.59E-06	1.98E-06	5.90E-09	5.28E-11	MND	MND	MND	MND	MND	MND	MND	1.10E-08	2.30E-08	0.00E+00	2.07E-07	0.00E+00
EP-marine	kg Ne	1.12E-03	1.50E-05	1.18E-04	1.25E-03	1.43E-06	1.69E-08	MND	MND	MND	MND	MND	MND	MND	1.52E-05	3.54E-06	0.00E+00	5.99E-05	0.00E+00
EP-terrestrial	mol Ne	1.48E-02	1.65E-04	2.07E-03	1.70E-02	1.57E-05	1.01E-07	MND	MND	MND	MND	MND	MND	MND	1.67E-04	3.91E-05	0.00E+00	3.37E-04	0.00E+00
POCP (“smog”) ³⁾	kg NMVOCe	4.14E-03	4.52E-05	3.61E-04	4.55E-03	4.45E-06	3.89E-08	MND	MND	MND	MND	MND	MND	MND	4.59E-05	1.25E-05	0.00E+00	1.21E-04	0.00E+00
ADP-minerals & metals ⁴⁾	kg Sbe	6.65E-06	1.88E-08	5.36E-09	6.68E-06	3.16E-09	1.09E-11	MND	MND	MND	MND	MND	MND	MND	1.68E-09	6.60E-09	0.00E+00	3.64E-08	0.00E+00
ADP-fossil resources	MJ	8.96E+00	8.01E-02	2.68E-02	9.07E+00	1.16E-02	7.39E-05	MND	MND	MND	MND	MND	MND	MND	4.45E-02	4.23E-02	0.00E+00	2.46E-01	0.00E+00
Water use ⁵⁾	m ³ e depr.	5.39E-01	3.66E-04	1.26E-01	6.66E-01	5.67E-05	4.44E-07	MND	MND	MND	MND	MND	MND	MND	1.20E-04	1.89E-04	0.00E+00	1.47E-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	1.94E+01	1.14E-03	9.88E-01	2.04E+01	1.81E-04	1.38E-06	MND	MND	MND	MND	MND	MND	MND	2.54E-04	4.76E-04	0.00E+00	4.55E-03	0.00E+00

Renew. PER as material	MJ	3.74E+00	0.00E+00	-3.27E-01	3.41E+00	0.00E+00	0.00E+00	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	-3.41E+00	0.00E+00
Total use of renew. PER	MJ	2.31E+01	1.14E-03	6.61E-01	2.38E+01	1.81E-04	1.38E-06	MND	MND	MND	MND	MND	MND	MND	MND	2.54E-04	4.76E-04	0.00E+00	-3.41E+00	0.00E+00
Non-re. PER as energy	MJ	9.35E+00	8.01E-02	2.59E+00	1.20E+01	1.16E-02	7.39E-05	MND	MND	MND	MND	MND	MND	MND	MND	4.45E-02	4.23E-02	0.00E+00	2.46E-01	0.00E+00
Non-re. PER as material	MJ	7.56E-01	0.00E+00	-2.14E-02	7.35E-01	0.00E+00	-1.11E-02	MND	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	-7.24E-01	0.00E+00
Total use of non-re. PER	MJ	1.01E+01	8.01E-02	2.57E+00	1.28E+01	1.16E-02	-1.10E-02	MND	MND	MND	MND	MND	MND	MND	MND	4.45E-02	4.23E-02	0.00E+00	-4.78E-01	0.00E+00
Secondary materials	kg	1.73E-04	2.69E-05	1.15E-05	2.12E-04	4.27E-06	2.64E-08	MND	MND	MND	MND	MND	MND	MND	MND	1.74E-05	1.17E-05	0.00E+00	8.79E-05	0.00E+00
Renew. secondary fuels	MJ	1.86E-06	2.91E-07	7.63E-06	9.77E-06	4.81E-08	1.01E-09	MND	MND	MND	MND	MND	MND	MND	MND	5.70E-08	1.18E-07	0.00E+00	3.37E-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	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m³	1.33E-02	9.94E-06	2.04E-02	3.37E-02	1.53E-06	7.91E-08	MND	MND	MND	MND	MND	MND	MND	MND	2.70E-06	5.48E-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	1.07E-03	9.00E-05	2.77E-03	3.93E-03	1.39E-05	0.00E+00	MND	MND	MND	MND	MND	MND	MND	5.96E-05	5.61E-05	0.00E+00	0.00E+00	0.00E+00
Non-hazardous waste	kg	1.84E-01	1.57E-03	8.90E-02	2.74E-01	2.49E-04	3.00E-04	MND	MND	MND	MND	MND	MND	MND	4.19E-04	9.21E-04	0.00E+00	1.00E+00	0.00E+00
Radioactive waste	kg	4.50E-05	5.53E-07	1.76E-05	6.32E-05	7.93E-08	0.00E+00	MND	MND	MND	MND	MND	MND	MND	3.13E-07	2.83E-07	0.00E+00	0.00E+00	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	3.71E-03	0.00E+00	1.89E-02	2.26E-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	0.00E+00	0.00E+00	2.17E-02	2.17E-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
Materials for energy rec	kg	1.01E-03	0.00E+00	0.00E+00	1.01E-03	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	1.74E-02	5.33E-03	1.20E-01	1.43E-01	7.69E-04	3.61E-05	MND	MND	MND	MND	MND	MND	MND	3.27E-03	2.79E-03	0.00E+00	7.52E-02	0.00E+00
Ozone depletion Pot.	kg CFC ₁₁ e	6.22E-10	9.89E-10	1.26E-08	1.42E-08	1.42E-10	7.64E-13	MND	MND	MND	MND	MND	MND	MND	5.60E-10	5.13E-10	0.00E+00	2.54E-09	0.00E+00
Acidification	kg SO ₂ e	5.36E-05	2.99E-05	4.30E-04	5.14E-04	3.10E-06	2.08E-08	MND	MND	MND	MND	MND	MND	MND	2.45E-05	9.26E-06	0.00E+00	6.88E-05	0.00E+00
Eutrophication	kg PO ₄ ³ e	2.31E-05	6.63E-06	1.32E-04	1.61E-04	7.28E-07	1.67E-06	MND	MND	MND	MND	MND	MND	MND	5.69E-06	2.11E-06	0.00E+00	2.87E-03	0.00E+00
POCP ("smog")	kg C ₂ H ₄ e	5.40E-06	8.81E-07	2.04E-05	2.67E-05	1.04E-07	6.55E-09	MND	MND	MND	MND	MND	MND	MND	5.36E-07	3.62E-07	0.00E+00	1.67E-05	0.00E+00
ADP-elements	kg Sbe	1.49E-07	1.84E-08	1.98E-06	2.15E-06	3.09E-09	1.06E-11	MND	MND	MND	MND	MND	MND	MND	1.65E-09	6.39E-09	0.00E+00	3.51E-08	0.00E+00
ADP-fossil	MJ	9.05E-01	8.01E-02	2.60E+00	3.59E+00	1.16E-02	7.39E-05	MND	MND	MND	MND	MND	MND	MND	4.45E-02	4.23E-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 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
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.

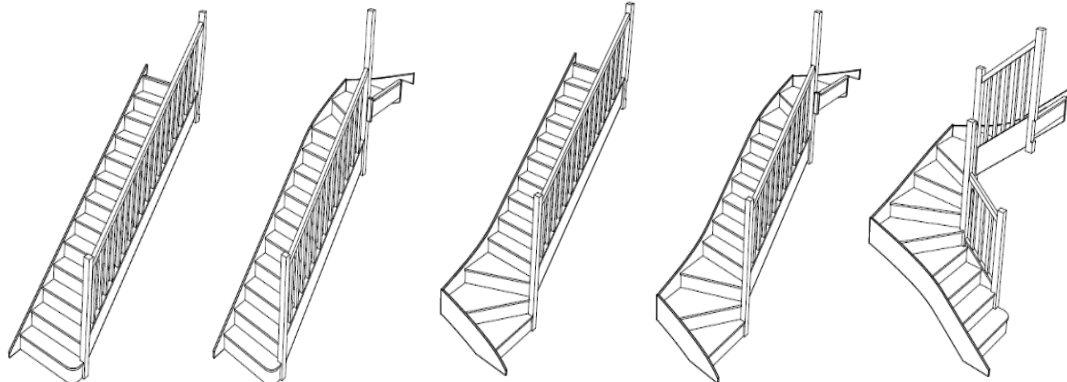
I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Anastasia Sipari, as an authorized verifier acting for EPD Hub Limited
10.11.2023

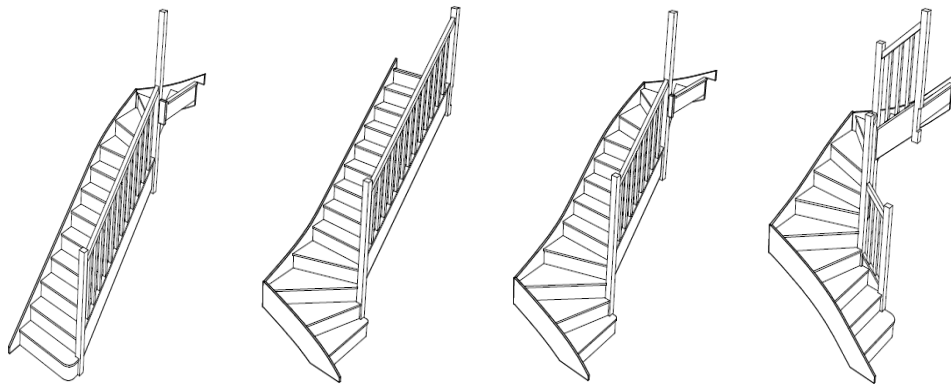


Annex

The LCA parameters of primary importance to specifiers, for the 9 most common alternative stair designs/types to the reference stair included in the body of this EPD, are given in the table (right), on a per kg basis. Images of each variant are provided below:



Straight Flight	3 Kite Top Winder	3 Kite Bottom Winder	3 Kite Top + Bottom Winder	6 Kite Mid Winder
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4 Kite Top Winder	4 Kite Bottom Winder	4 Kite Top + Bottom Winder	8 Kite Mid Winder
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Stair	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
Straight MDF <i>(EPD Reference stair)</i>	-0.486	-0.485	0.653	0.634
Straight Timber string	-0.596	-0.595	0.625	0.605
3 Kite Top Winder	-0.353	-0.352	0.782	0.760
3 Kite Bottom Winder	-0.356	-0.354	0.776	0.754
3 Kite Top + Bottom Winder	-0.337	-0.335	0.774	0.759
6 Kite Mid Winder	-0.459	-0.456	0.726	0.708
4 Kite Top Winder	-0.328	-0.326	0.810	0.787
4 Kite Bottom Winder	-0.333	-0.331	0.796	0.781
4 Kite Top + Bottom Winder	-0.335	-0.332	0.798	0.775
8 Kite Mid Winder	-0.430	-0.428	0.760	0.740