ENVIRONMENTAL PRODUCT DECLARATION

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

Balcony Anchor, with support arm and thermal break
Sapphire Balconies

EPD HUB, EPDHUB-0108
Publishing date 23 August 2022, last updated date 23 August 2022, valid until 23 August 2027

Created with One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Sapphire Balconies
Address	11 Arkwright Road, Reading, UK, RG2 0LU
Contact details	support@balconies.global
Website	www.balconies.global

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	Nick Haughton
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
EPD verifier	E.A as an authorized verifier acting for EPD Hub

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	Balcony Anchor, with support arm and thermal break
Additional labels	Cassette Anchors; Glide-On Anchors, Cast-In Brackets, Sapphire M30 Anchors, COACH Balcony Anchors
Product reference	Cast in anchor
Place of production	United Kingdom
Period for data	2022
Averaging in EPD	No averaging

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 Single anchor
Declared unit mass	70 kg
GWP-fossil, A1-A3 (kgCO2e)	1,6E2
GWP-total, A1-A3 (kgCO2e)	1,61E2
Secondary material, inputs (%)	4,71E1
Secondary material, outputs (%)	9,45E1
Total energy use, A1-A3 (kWh)	6,06E2
Total water use, A1-A3 (m3e)	2,03E0

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Sapphire is a balcony specialist of high-rise residential developments. Operating throughout the UK and beyond generally providing aluminium Glide-On balconies.

PRODUCT DESCRIPTION

The Sapphire Cast-in Anchor is a rigid balcony anchor for attaching Glide-On balconies onto high-rise RC frame residential buildings. This EPD is for a cast-in scenario to work with a Reinforced concrete slab cast on site. It includes the cast-in balcony anchor, the thermal break, the stub and the arm. This product is the connection for balconies to be added onto a building securely. This is an M30 anchor (twice the rigidity required under BS EN 1991) with a 25mm thermal break to achieve thermal values required under the English building regulation Part L. The arms and back plates have been assumed to be taking a typical projection between 1.5m and 2.2m from the facade to the inside edge of the balcony.
https://balconies.global/our-product/anchors-stubs/cast-in-anchors/
Further information can be found at www.balconies.global.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	98	EU
Minerals	1	EU
Fossil materials	1	EU
Bio-based materials	-	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

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

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 Single anchor
Mass per declared unit	70 kg
Functional unit	Balcony support arm and cast in anchor for a 2.2m projection
Reference service life	100

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	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. 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 anchor uses a series of components assembled into 1 unit. The assembly consists of stainless steel M30 fixings, supplied ready for assembly. There is a fabricated preassembled steel stub bracket and arm supplied which are assembled onto the anchors after they have been galvanised. The thermal break is added between these two subassemblies with the compressible mineral wool used at the top and the non-compressible thermal break used at the bottom.

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.

Once assembled these anchors are packed onto multiuse metal stillages and sent to the site, distance is 125.7km. These are dispatched to sites on HGVs and use strapping and plastic packaging. Once on-site, they are lifted off and moved to the correct location using a tower crane. final movement and setting out is done with manual handling or with mechanical hand-operated equipment. Energy consumption for installation is considered.

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.

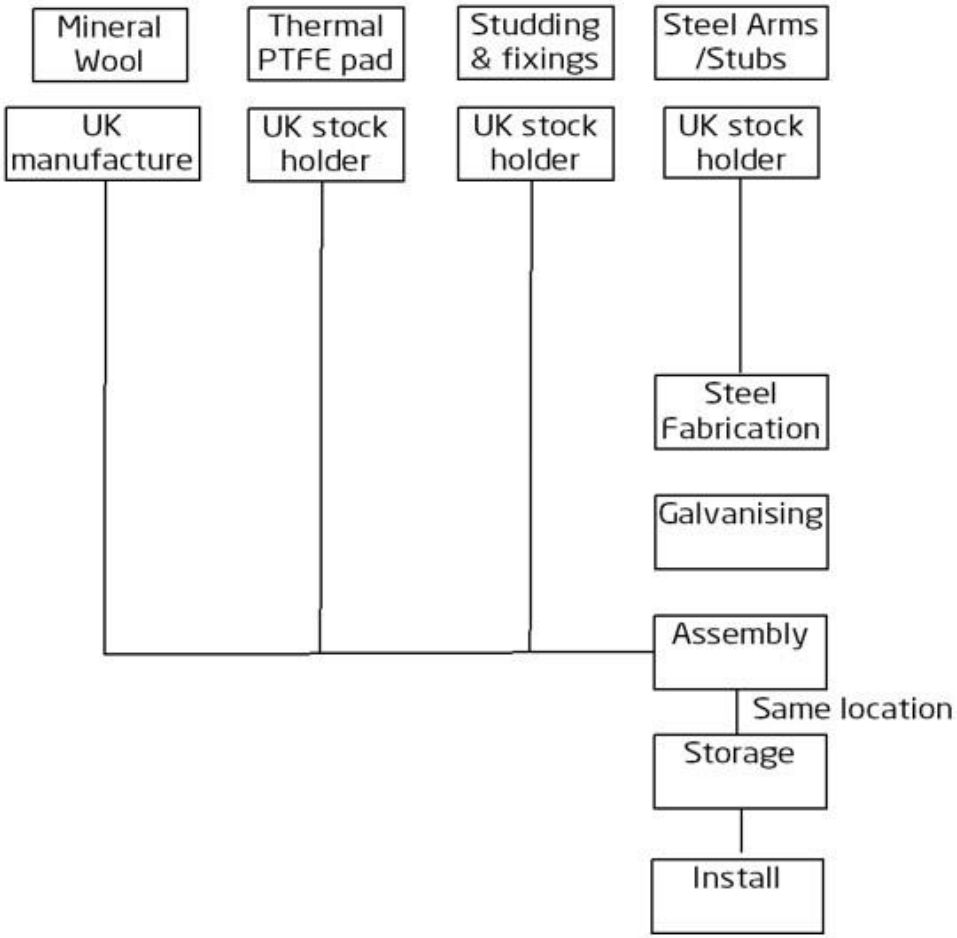
PRODUCT END OF LIFE (C1-C4, D)

When a building is demolished all metal items will be taken by HGV to nearby metal recycling plants where they will be processed and recycled, also the ptfe pad. Energy for deconstruction is taken into account in the LCA.

Although it is recycled in various scenarios and may be recycled along with other insulation materials in the facade, in this scenario we have assumed the mineral wool is likely to be disposed of and taken to a waste disposal station using light commercial vehicles. Reference for the metals is coming from the World steel association (https://worldsteel.org/) that says that 95% of steel is recycled and 5% landfill in the World.

When considering the end of life for this product it is important to remember this has been worked on the basis that this is happening now with the tools and vehicles of today. It cannot be based on the assumption (even though it may be a reality in the future) that in 60 or 100 years after the service life the methods and technologies are unlikely to include the deisel technology and transport of todays world.

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	Allocated by mass or volume
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	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	-

This EPD is product and factory specific and does not contain average calculations.

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, 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_2e	1,53E2	4,65E-1	7,22E0	1,61E2	1,46E0	7,7E-1	MND	MND	MND	MND	MND	MND	MND	4,53E-1	3,3E-2	3,04E-1	2,02E-2	-1,19E2
GWP – fossil	kg CO_2e	1,52E2	4,65E-1	7,22E0	1,6E2	1,47E0	7,69E-1	MND	MND	MND	MND	MND	MND	MND	4,53E-1	3,3E-2	3,05E-1	2,01E-2	-1,18E2
GWP – biogenic	kg CO_2e	7,19E-1	3,37E-4	1,59E-4	7,19E-1	7,83E-4	4,94E-4	MND	MND	MND	MND	MND	MND	MND	2,66E-4	2,02E-5	-1,27E-3	3,99E-5	-8,17E-2
GWP – LULUC	kg CO_2e	1,28E-1	1,4E-4	1,52E-3	1,3E-1	5,2E-4	9,92E-4	MND	MND	MND	MND	MND	MND	MND	5,88E-4	1,16E-5	1,77E-4	5,98E-6	-6,73E-2
Ozone depletion pot.	kg $CFC_{-11}e$	9,73E-6	1,09E-7	1,46E-6	1,13E-5	3,33E-7	7,76E-8	MND	MND	MND	MND	MND	MND	MND	4,61E-8	7,57E-9	2,22E-8	8,29E-9	-4,26E-6
Acidification potential	mol H^+e	1,44E0	1,95E-3	8,95E-2	1,53E0	5,99E-3	2,81E-3	MND	MND	MND	MND	MND	MND	MND	1,62E-3	1,36E-4	8,74E-4	1,91E-4	-6,45E-1
EP-freshwater[2)]	kg Pe	8,51E-3	3,78E-6	4,3E-5	8,55E-3	1,23E-5	2,37E-5	MND	MND	MND	MND	MND	MND	MND	1,37E-5	2,85E-7	5,06E-6	2,43E-7	-7,71E-3
EP-marine	kg Ne	1,82E-1	5,88E-4	3,86E-2	2,22E-1	1,78E-3	5,31E-4	MND	MND	MND	MND	MND	MND	MND	3,11E-4	4,03E-5	2,42E-4	6,58E-5	-1,29E-1
EP-terrestrial	mol Ne	4,42E0	6,5E-3	4,23E-1	4,85E0	1,97E-2	6,26E-3	MND	MND	MND	MND	MND	MND	MND	3,68E-3	4,45E-4	2,64E-3	7,25E-4	-1,46E0
POCP ("smog")[3)]	kg NMVOCe	6,86E-1	2,09E-3	1,11E-1	7,99E-1	6,02E-3	1,58E-3	MND	MND	MND	MND	MND	MND	MND	9,25E-4	1,4E-4	8,55E-4	2,11E-4	-6,29E-1
ADP-minerals & metals[4)]	kg Sbe	9,66E-2	7,93E-6	3,65E-5	9,66E-2	3,97E-5	3,36E-6	MND	MND	MND	MND	MND	MND	MND	1,09E-6	8,24E-7	3,74E-6	1,84E-7	-3,83E-1
ADP-fossil resources	MJ	1,83E3	7,23E0	1,04E2	1,94E3	2,21E1	1,86E1	MND	MND	MND	MND	MND	MND	MND	1,11E1	5,04E-1	2,99E0	5,63E-1	-1,09E3
Water use[5)]	m^3e depr.	1,11E2	2,69E-2	2,72E-1	1,11E2	7,12E-2	2,91E-2	MND	MND	MND	MND	MND	MND	MND	1,33E-2	1,79E-3	6,42E-2	2,6E-2	-6,22E1

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	2,55E2	9,1E-2	2,14E0	2,57E2	3,12E-1	3,22E0	MND	MND	MND	MND	MND	MND	MND	1,82E0	7,15E-3	1,47E-1	4,55E-3	-1,05E2
Renew. PER as material	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER	MJ	2,55E2	9,1E-2	2,14E0	2,57E2	3,12E-1	3,22E0	MND	MND	MND	MND	MND	MND	MND	1,82E0	7,15E-3	1,47E-1	4,55E-3	-1,05E2
Non-re. PER as energy	MJ	1,82E3	7,23E0	1E2	1,93E3	2,21E1	1,86E1	MND	MND	MND	MND	MND	MND	MND	1,11E1	5,04E-1	2,99E0	5,63E-1	-1,05E3
Non-re. PER as material	MJ	1,71E1	0E0	3,26E0	2,03E1	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	-3,97E1
Total use of non-re. PER	MJ	1,84E3	7,23E0	1,04E2	1,95E3	2,21E1	1,86E1	MND	MND	MND	MND	MND	MND	MND	1,11E1	5,04E-1	2,99E0	5,63E-1	-1,09E3
Secondary materials	kg	3,3E1	0E0	1,07E-3	3,3E1	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	6,53E1	0E0	4,41E1
Renew. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Non-ren. secondary fuels	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0

Use of net fresh water	m^3	2,02E0	1,5E-3	1,04E-2	2,03E0	3,78E-3	4,53E-3	MND	MND	MND	MND	MND	MND	MND	2,66E-3	9,54E-5	8,98E-4	6,16E-4	-2,46E0

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	8,09E1	7,02E-3	1,03E-1	8,1E1	2,25E-2	5,42E-2	MND	MND	MND	MND	MND	MND	MND	3,2E-2	5,24E-4	0E0	5,25E-4	-3,8E1
Non-hazardous waste	kg	4,42E2	7,77E-1	1,71E0	4,45E2	1,54E0	8,72E-1	MND	MND	MND	MND	MND	MND	MND	4,59E-1	4,35E-2	0E0	3,82E0	-4,85E2
Radioactive waste	kg	4,38E-3	4,96E-5	7,07E-4	5,14E-3	1,52E-4	1,44E-4	MND	MND	MND	MND	MND	MND	MND	8,62E-5	3,44E-6	0E0	3,72E-6	-9,92E-4

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	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for recycling	kg	0E0	0E0	1,83E-2	1,83E-2	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	6,62E1	0E0	0E0
Materials for energy rec	kg	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Exported energy	MJ	0E0	0E0	0E0	0E0	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0

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_2e	1,49E2	4,61E-1	7,16E0	1,57E2	1,46E0	7,54E-1	MND	MND	MND	MND	MND	MND	MND	4,45E-1	3,27E-2	2,98E-1	1,98E-2	-1,14E2
Ozone depletion Pot.	kg CFC_{-11}e	1,07E-5	8,68E-8	1,17E-6	1,19E-5	2,65E-7	8,88E-8	MND	MND	MND	MND	MND	MND	MND	5,27E-8	6,02E-9	1,84E-8	6,57E-9	-3,81E-6
Acidification	kg SO_2e	7,9E-1	9,45E-4	6,41E-2	8,55E-1	2,94E-3	2,36E-3	MND	MND	MND	MND	MND	MND	MND	1,35E-3	6,73E-5	5,5E-4	7,97E-5	-6,34E-1
Eutrophication	kg PO_4^3e	3,61E-1	1,91E-4	1,45E-2	3,76E-1	6,05E-4	1E-3	MND	MND	MND	MND	MND	MND	MND	4,21E-4	1,4E-5	6,33E-4	1,54E-5	-3,49E-1
POCP (“smog”)	kg C_2H_4e	6,74E-2	5,99E-5	2,05E-3	6,95E-2	1,94E-4	9,94E-5	MND	MND	MND	MND	MND	MND	MND	5,65E-5	4,35E-6	5,2E-5	5,84E-6	-7,37E-2
ADP-elements	kg Sbe	9,66E-2	7,93E-6	3,65E-5	9,66E-2	3,97E-5	3,36E-6	MND	MND	MND	MND	MND	MND	MND	1,09E-6	8,24E-7	3,74E-6	1,84E-7	-3,83E-1
ADP-fossil	MJ	1,83E3	7,23E0	1,04E2	1,94E3	2,21E1	1,86E1	MND	MND	MND	MND	MND	MND	MND	1,11E1	5,04E-1	2,99E0	5,63E-1	-1,09E3

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.

Elma Avdyli as an authorized verifier acting for EPD Hub Limited
23.08.2022

VERIFIED ISO 14025