ENVIRONMENTAL PRODUCT DECLARATION

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

Halo Cubic

Lappset Group Ltd

Publishing date 3.11.2023
last updated 3.11.2023
valid until 3.11.2028

One Click LCA

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Lappset Group Ltd
Address	Hallitie 17, Rovaniemi
Contact details	sales@lappset.com
Website	www.lappset.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 modules C1-C4, D
EPD author	Susanna Kiviniemi, Greenstep Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☐ External verification
EPD verifier	A. M. Kloppenburg, SHR

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	Halo Cubic
Product reference	239031M
Place of production	Talliin, Estonia and Rovaniemi, Finland
Period for data	2022

ENVIRONMENTAL DATA SUMMARY

Declared unit	One product
Declared unit mass	5361 kg
GWP-fossil, A1-A3 (kgCO2e)	9 400
GWP-total, A1-A3 (kgCO2e)	3480
Secondary material, inputs (%)	32
Secondary material, outputs (%)	83
Total energy use, A1-A3 (kWh)	67500.0
Total water use, A1-A3 (m3e)	964

GOAL AND INTENDED APPLICATION OF THE STUDY

The Goal of the study was to provide information to the clients about the environmental impact of the product for the supply phase of a new playground.

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Lappset Group Oy is one of the leading manufacturers of playground and sport park equipment worldwide. We make high-quality products that are hard-wearing and long-lasting and take account of the needs of users of different ages. Our products are safe, as they are designed in accordance with European safety standards. Our range of interactive products makes us a pioneer in play and sport solutions for the digital era. Our senior parks support active ageing and psychological and physical well-being. Our versatile range of park and street furniture provides rest and relaxation and opportunities for socialising. Our thematic activity parks, which are delivered on a turnkey basis, create unforgettable experiences and take play, sport and quality time to a completely new level. Lappset Creative produces activity parks for different kinds of indoor and outdoor spaces, based on your brand or chosen theme and customised to suit your needs. The PlayCare service takes care of assembling, servicing and maintaining products on a turnkey basis. Our PlayCare team also inspects and services products supplied by other manufacturers.

PRODUCT DESCRIPTION

Height is a fundamental element of exciting play. Rising to nearly 8 metres, this tower consists of three elements (a cube and two cuboids on top of each other) and offers users chances for truly testing their limits. How high do you dare to climb? Are you brave enough to walk on the transparent floor? Will you climb down or speed down one of the two tube slides?

Further information can be found at www.lappset.com.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	22	Finland / EU / China
Minerals	0	-
Fossil materials	14	EU
Bio-based materials	63	Finland / Sweden

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	1514
Biogenic carbon content in packaging, kg C	290

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	One product
Mass per declared unit	5361kg
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			Ass-embly 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							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 products are manufactured in two locations. Metal parts are manufactured in Estonia factory and the wooden parts are manufactured in Finland. The metal parts are transported to Finland where all the product parts are sent to the customer. The following items come to Lappset as readymade parts/components to the component storage: All the screws, bolts and such, plastic parts, net parts such as the ropes. Lappset has also items that are only intermediary products, such as the swing seats.

Estonia factory uses hydropower as an energy source. The painting line operates on gas as well as some forklifts. The rest of the forklifts operates on diesel. In Finland the factory uses district heating generated from wood in the vicinity of the factory. The electricity used in Rovaniemi is green electricity (Hydro 51,7%, Bio 25,7 %, Wind 15,8% and solar 6,8% according to 2022 distribution). The painting line operates on gas and there are two types if forklifts, diesel and electric. The energy utilisation of the different operations are calculated according to the treatments made for the product parts, as the energy utilisation of the different processes is known. The raw material consumption information comes from the design of the products. The waste from the process are allocated by production volumes. The ready made product parts are packaged on wooden pallets and boxes and wrapped in plastics.

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.

The products are transported all over the world and the installation requirements vary according to the installation location. This stage was not included in the calculations.

PRODUCT USE AND MAINTENANCE (B1-B7)

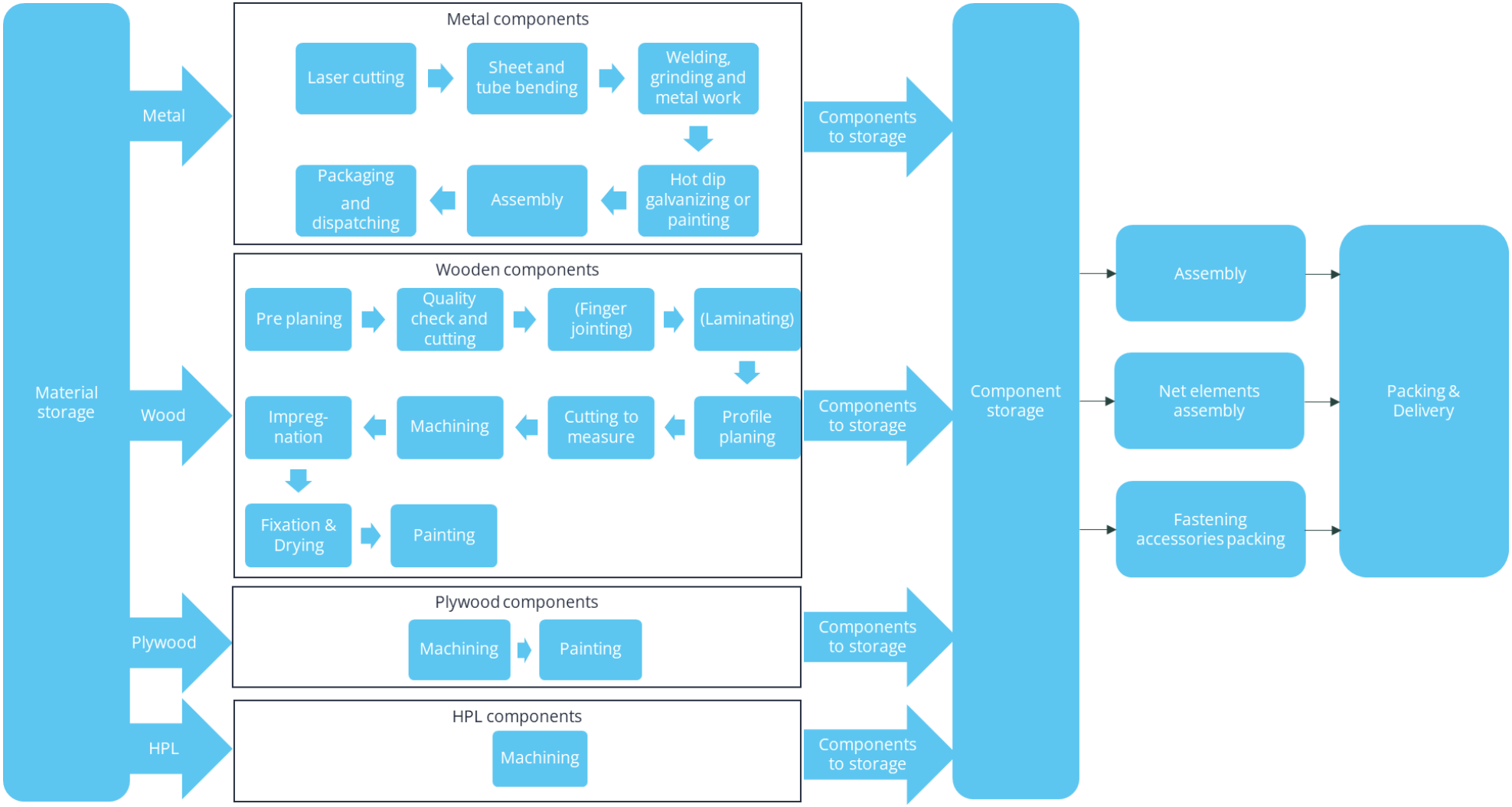
This EPD does not cover the use phase.

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

PRODUCT END OF LIFE (C1-C4, D)

The end of life is modelled to EU area. In the end of life all the wooden parts of the product can be utilized in energy production. The utilisation rate was assumed to be 100 % as no organic waste can be landfilled in EU area. The metal can be recycled at the end of life. The assumptions in the calculations for recycling rates were 90 % for steel and 70 % for aluminium. The plastic parts are assumed to be utilised at energy production in the end of life. The EU average value 25 % for plastics landfilling was used in the calculations.

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 infrastructure is not included in the calculation because of the complexity of the infrastructure elements and because the long lifecycle of the infrastructure, which make the allocation factor relatively small.

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
Manufacturing energy and waste	Allocated by mass

Certain assumptions about glue, paint and wood preservative amounts have been made as no measured data is available on how much of these chemicals are used per item. The assumptions made are based on information from the total use per year, machine information about the amounts per m2 and measurement information of test pieces of wood. As the wooden parts come in different forms and shapes the surface area per cubic meter varies also. This means that the average number gives us the best estimate of the amounts.

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 3.8 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_2e	3150	434	-102	3480	0,00	0,00	MND	MND	MND	MND	MND	MND	MND	3,97	44,10	6320	27,40	-4230
GWP – fossil	kg CO_2e	7810	433	1150	9400	0,00	0,00	MND	MND	MND	MND	MND	MND	MND	3,97	44,10	335	37,70	-4230
GWP – biogenic	kg CO_2e	-4710	0	-1260	-5970	0,00	0,00	MND	MND	MND	MND	MND	MND	MND	0,00	0,00	5980	-10,30	0,00
GWP – LULUC	kg CO_2e	47,90	0,19	2,63	50,70	0,00	0,00	MND	MND	MND	MND	MND	MND	MND	0,00	0,02	0,11	0,00	-0,496
Ozone depletion pot.	kg CFC_{-11}e	0,00	0,00	0,00	0,00	0,00	0,00	MND	MND	MND	MND	MND	MND	MND	0,00	0,00	0,00	0,00	0,00
Acidification potential	mol H^+e	39,30	2,85	11,50	53,60	0,00	0,00	MND	MND	MND	MND	MND	MND	MND	0,04	0,15	1,05	0,02	-42,6
EP-freshwater[2)]	kg Pe	0,57	0,00	0,05	0,62	0,00	0,00	MND	MND	MND	MND	MND	MND	MND	0,00	0,00	0,00	0,00	-0,21
EP-marine	kg Ne	7,43	0,67	3,27	11,40	0,00	0,00	MND	MND	MND	MND	MND	MND	MND	0,02	0,03	0,38	0,02	-5,5
EP-terrestrial	mol Ne	84,60	7,41	46,70	139,00	0,00	0,00	MND	MND	MND	MND	MND	MND	MND	0,20	0,39	4,12	0,07	-61
POCP ("smog")[3)]	kg NMVOCe	42,60	2,27	10,30	55,20	0,00	0,00	MND	MND	MND	MND	MND	MND	MND	0,06	0,14	1,07	0,03	-20,50
ADP-minerals & metals[4)]	kg Sbe	0,06	0,00	0,01	0,07	0,00	0,00	MND	MND	MND	MND	MND	MND	MND	0,00	0,00	0,00	0,00	-0,003
ADP-fossil resources	MJ	132000	6520	16300	155000	0,00	0,00	MND	MND	MND	MND	MND	MND	MND	53,4	687	1100	29,5	-53 200
Water use[5)]	m^3e depr.	3090	29	822	3940	0,00	0,00	MND	MND	MND	MND	MND	MND	MND	0,14	3,07	247,00	0,09	-404

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	59500	81	53000	113000	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,31	7,73	106,0	0,22	-3900
Renew. PER as material	MJ	38900	0	10400	49300	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00	0,00	-49300	-31,9	0
Total use of renew. PER	MJ	98400	81	63400	162000	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,31	7,73	-49200	-31,7	-3900
Non-re. PER as energy	MJ	108000	6520	14500	129000	MND	MND	MND	MND	MND	MND	MND	MND	MND	53,4	687	1100	29,5	-53500
Non-re. PER as material	MJ	26500	0	3750	30200	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00	0,00	-23700	-6520,0	0
Total use of non-re. PER	MJ	135000	6520	18200	159000	MND	MND	MND	MND	MND	MND	MND	MND	MND	53,40	687	-22600	-6490,0	-53500
Secondary materials	kg	398,0	2,08	129,0	528	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,02	0,19	3,46	0,01	672
Renew. secondary fuels	MJ	6,58	0,02	1090	1100	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00	0,00	0,04	0,00	-2,7
Non-ren. secondary fuels	MJ	0,00	0,00	0,00	0,00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00	0,00	0,00	0,00	0,00
Use of net fresh water	m^3	184	0,80	779	964	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00	0,09	0,05	0,02	-38

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	1240	7,79	135,00	1380	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,07	0,91	8,77	0,00	-178
Non-hazardous waste	kg	5690	125,00	1600	7410	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,50	14,90	3560	323,0	-6840
Radioactive waste	kg	0,45	0,04	0,05	0,54	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00	0,00	0,00	0,00	-0,08

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	0,00	0,00	0,00	0,00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00	0,00	0,0	0,00	0
Materials for recycling	kg	9,81	0,00	30,00	39,80	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00	0,00	1110	0,0	0
Materials for energy rec	kg	0,68	0,00	0,00	0,68	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00	0,00	0	0,0	0
Exported energy	MJ	0,00	0,00	0,00	0,00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,0	0	0	0,0	-33300

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	7340	429	1130	8900	MND	MND	MND	MND	MND	MND	MND	MND	MND	3,93	43,70	330,0	29,60	-4060
Ozone depletion Pot.	kg $CFC_{-11}e$	0,00	0,00	0,00	0,00	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00	0,00	0	0,0	0,0002
Acidification	kg SO_2e	30,80	2,30	7,94	41,10	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,03	0,12	1	0,0	-36,4
Eutrophication	kg PO_4^3e	12,50	0,36	3,35	16,20	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,0	0	1	3,6	-7,5
POCP (“smog”)	kg C_2H_4e	2,88	0,08	0,64	3,60	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00	0,01	0,0	0,01	-2,21
ADP-elements	kg Sbe	0,46	0,00	0,01	0,48	MND	MND	MND	MND	MND	MND	MND	MND	MND	0,00	0,00	0	0,0	0,003
ADP-fossil	MJ	121000	6520	18200	146000	MND	MND	MND	MND	MND	MND	MND	MND	MND	53,40	687,0	1100	29,5	-53000

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.

INDEPENDENT RESEARCH
SHR

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.

23-10-2023

A. M. Kloppenburg MSc.