

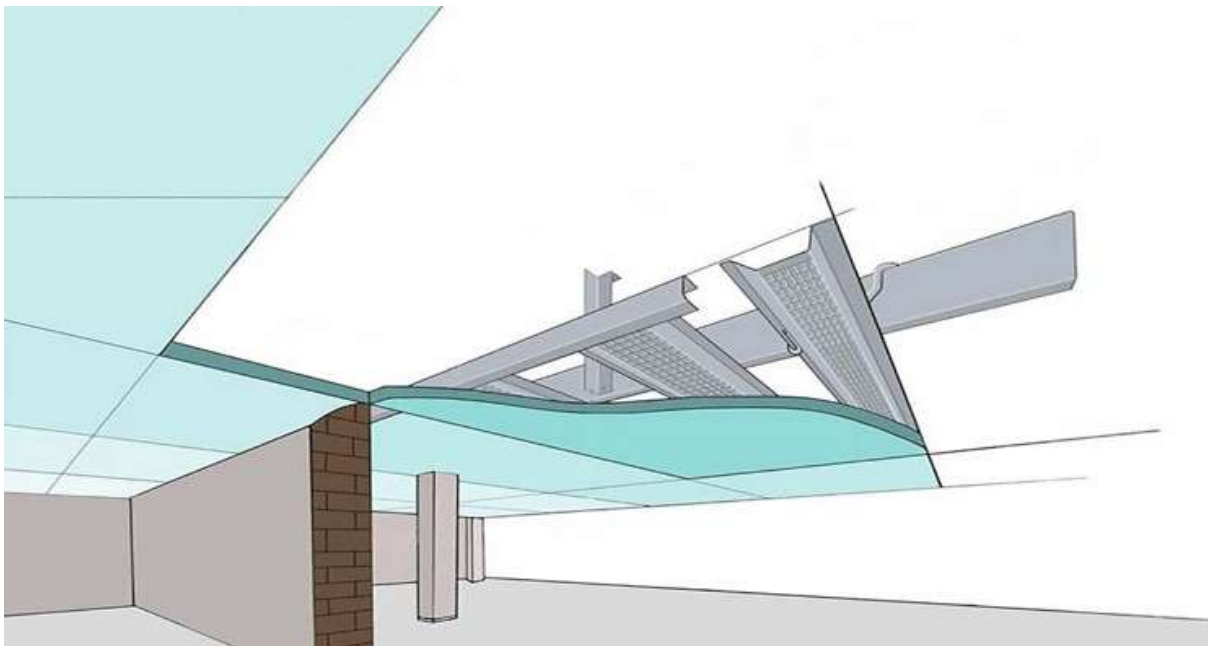
ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH ISO 14025:2006 AND EN 15804:2012+A2:2019/AC:2021 FOR

PLASTERBOARD METAL FRAMING COMPONENTS

FROM

LIBRA SYSTEMS LTD



EPD registration number: S-P-07839

Publication date: 2023-03-31

Valid until 2028-03-28

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com

The environmental impacts of this product have been assessed from cradle to gate with modules C1-C4 & module D. This EPD has been verified by an independent third party.



Programme:

The International EPD® System
www.environdec.com

Programme operator:

EPD International AB



PLASTER BOARD METAL FRAMING COMPONENT EPD

PROGRAMME INFORMATION

EPD programme	The International EPD® System
EPD programme operator	EPD International AB - Box 210 60 - SE 100-31 - Stockholm - Sweden www.environdec.com - info@environdec.com
EPD owner	Libra Systems Ltd Unit E, Halesfield 10 - Telford - Shropshire TF7 4QP - UK https://www.librasystemsuk.com
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EPD valid until	2028-03-28
EPD version	1.0
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EPD based on Product Category Rules	The CEN standard EN 15804:2012 + A2:2019 serves as the core PCR PCR 2019:14 Construction products (EN 15804:A2), v1.2.5, 2022-11-01 - The International EPD® System
PCR review conducted by	The Technical Committee of the International EPD® System Chair: Claudia Peña; contact via info@environdec.com
Third-party verification	Independent third-party verification of this EPD and data, according to ISO 14025/2006: <input type="checkbox"/> internal certification <input checked="" type="checkbox"/> external verification
Third-party verifier	Matt Fishwick, Fishwick Environmental, UK Recognized Individual Verifier
Accredited or approved by	The International EPD® System
Procedure for data follow-up during EPD validity	involves third party Verifier: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>
LCA conducted by	 Chris Foster, EuGeos Limited, UK - www.eugeos.co.uk
LCA software	openLCA
Background data	ecoinvent v3.6

The EPD owner has the sole ownership, liability and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be

- based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs;
- cover products with identical functions, technical performances and use (e.g. identical declared/functional units);
- have equivalent system boundaries and descriptions of data;
- apply equivalent data quality requirements, methods of data collection, and allocation methods;
- apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors);
- have equivalent content declarations;
- and be valid at the time of comparison.

For further information about comparability, see EN 15804 and ISO 14025.

Company profile

Libra Systems Limited is a privately owned British manufacturing company dedicated to the production of metal framing components and has been for over 50 years.

Libra Systems is accredited to ISO 9001 quality standard and ISO 14001 environmental standard.

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Product information

PLASTERBOARD METAL FRAMING COMPONENTS

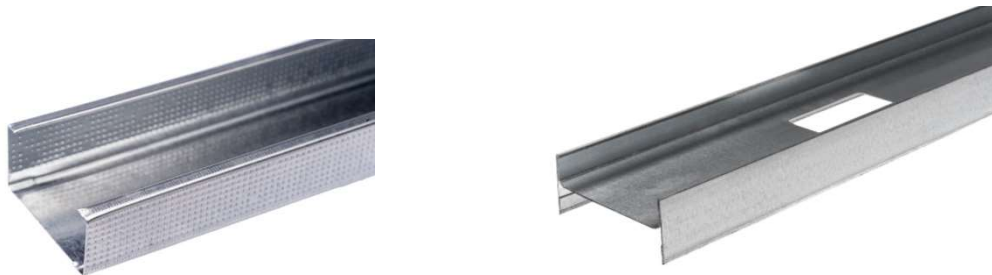
Libra Systems' Plasterboard Metal Framing Components are made from light-gauge steel and are used for supporting non-loadbearing plasterboard walls and ceilings, incorporating structural, acoustic and fire resistance properties.

The products comprise of Stud & Track and Wall Liner for walls and Metal Furring for plasterboard ceilings. The steels used by Libra Systems meet requirements in BS EN 10346:2015.

Stud & Track System

A range of vertical metal studs combined with ceiling and floor tracks; together they form a framework which is designed to accept gypsum wallboards in single or double thickness.

Libra Stud & Track system is available in several widths, each of which has been tested to a variety of fire, acoustic and structural standards. Studs have a knurled face to assist straight screw penetration when fixing wallboards with drywall screws; this allows the contractor to complete drywalls with the minimum amount of effort.



C & I Stud

Ceiling Systems

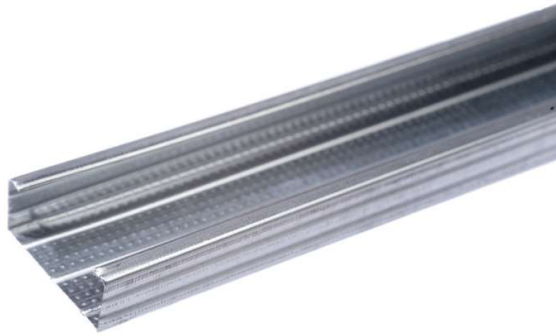
Libra's metal furring products are ceiling systems for direct fix of plasterboard, tested to carry up to two layers of 15mm plasterboard.



Metal Furring FF10

Wall Liner Systems

Libra's wall channel is a general purpose internal, non-load bearing wall lining system consisting of vertical channels, ceiling and floor tracks and fixing brackets for use with gypsum wallboards. The wall channel brackets compensate for background irregularities, which also allows for minimal or no preparation to the surface being lined. The cavity behind the wall channel lining system can be used to accommodate services and can also permit enhancement of thermal and acoustic performance.



Wall Liner FR10

Libra Systems' plasterboard metal framing components are classified CPC 4126 under the UN CPC classification system v2.1. They meet the requirements of BS EN 14195:2014.

MANUFACTURE & SUPPLY

The base material for Libra Systems' metal framing components is galvanised cold-rolled wide strip steel; components are made from this steel in several gauges, of which 0.5mm (G0.50) is the most common. At Libra Systems' factory, the 'C', 'U' and 'I' sections of the finished components are formed by further rolling; profiles are then subject to additional finishing activities before being cut to length.

PACKAGING & TRANSPORTATION

Packaging comprises recycled polyethylene terephthalate (PET) or polypropylene (PP) strapping, along with timber bearers.

INSTALLATION

Libra Systems' metal framing components constitute the framework for partitions, wall linings and ceilings built using gypsum wallboards. Installation should follow wallboard manufacturers' instructions.

PRODUCT USE AND MAINTENANCE

The framing components are concealed when the partition, wall lining or ceiling is complete, and require no maintenance or repair during its life.

END-OF-LIFE

When the partition is dismantled, the metal framing components should be segregated for recycling with other ferrous metals; European Waste Catalogue (EWC) code 17 04 05 applies.

CONTENT DECLARATION

The material composition of Libra Systems' plasterboard metal framing components is shown below, per declared unit.

Components / materials	Weight; kg	Weight; %	Post-consumer material; weight %	Biogenic material; weight %	Biogenic material; kg C/kg
Steel	0.96 – 0.99	96 - 99	assumed 0	0	0
Zinc	0.01 – 0.04	1 - 4	assumed 0	0	0
TOTAL	1.0	100	-	0	0

Packaging materials	Weight - kg	Weight - % (vs product)	Weight biogenic carbon kg C/kg
Wood	0.005	0.5	0.5
Plastics	<0.001	<0.1	assumed 0
TOTAL	0.005	<0.5	0.5

No substance included in the Candidate List of Substances of Very High Concern for authorisation under the REACH Regulations is present in the product, either above the threshold for registration with the European Chemicals Agency or above 0.1% (wt/wt).

RESIDUAL RISKS AND EMERGENCIES

There are no residual risks associated with the normal use of Libra Systems' plasterboard metal framing components.

FURTHER PRODUCT INFORMATION

Detailed product information and datasheets can be found on our website:

<https://www.librasystemsuk.com> or requested by emailing sales@librasystemsuk.com.

LCA information

This section of the EPD records key features of the LCA on which it is based.

DECLARED UNIT

This EPD is for an average of Libra Systems' plasterboard metal framing components. The declared unit is 1kg of metal framing components.

SCOPE

The scope of the EPD is defined using the modular approach set out in EN 15804. This EPD covers the production stage (modules A1-A3) and end-of-life management (C & D) - see below; as permitted by EN 15804, modules A1-A3 are declared in aggregated form.

Product stage			Construction process stage		Use stage							End of life stage				Benefits & loads beyond the system boundaries
Raw material supply	Transport	Manufacturing	Transport to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste treatment	Disposal	Reuse- recovery- recycling- potential
Modules declared																
X: included in LCA; ND: module not declared; NR: module not relevant																
A 1	A 2	A 3	A 4	A 5	B1	B2	B3	B4	B5	B6	B7	C 1	C 2	C 3	C 4	D
X	X	X	N D	N D	N D	N D	N D	N D	N D	N D	N D	X	X	X	X	X
Geography																
GLO	GB	-	-	-	-	-	-	-	-	-	-	-	GB	GB	GB	GLO
Specific data used																
>90%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation in products & sites																
<10%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Module D provides an estimate of the potential benefits that would accrue to a different product system were the product constituents and recycled wastes identified in data for other life cycle modules actually recycled or recovered at current rates and using current technologies.

REFERENCE SERVICE LIFE

No reference service life is declared.

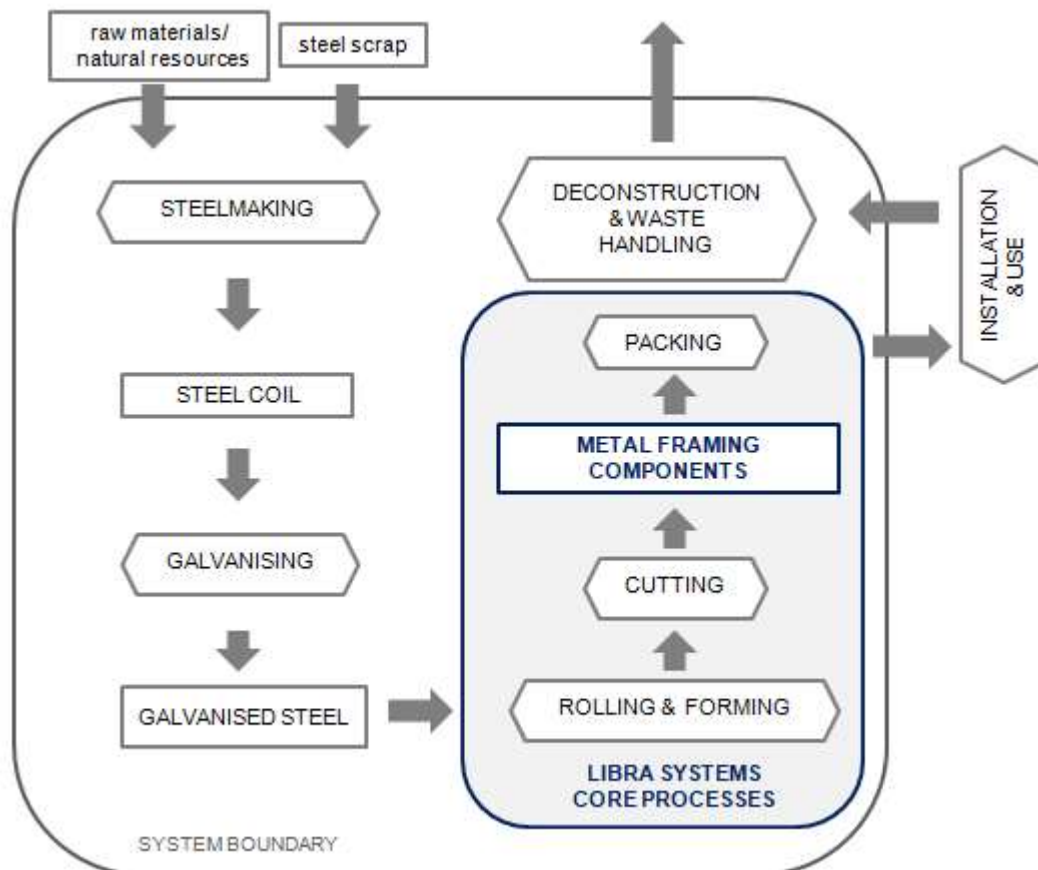
Correctly installed, Libra Systems' plasterboard metal framing components will continue to fulfill their purpose for the service life of the board, and are sufficiently durable to remain in place for the 60-year building lifetime applied in whole-building LCA.

SYSTEM BOUNDARIES

The system includes production of all raw materials and components from basic resources; transport of those materials at all stages up to Libra Systems' manufacturing site; the production of fuels and energy carriers and their delivery to manufacturing sites; end-of-life stages; and the treatment of all wastes. The upstream processing of recycled material inputs that have passed the end-of-waste state is outside the system boundary.

All energy used in Libra Systems' factories is included. Maintenance of equipment is excluded.

The product life cycle covered by this EPD is illustrated below.



CUT-OFF CRITERIA

The collected data covered all raw materials, consumables, and packaging materials; associated transport to manufacturing sites; process energy and water use; direct production wastes; emissions to air and water.

According to EN 15804 and the PCR, flows can be omitted (cut off) from a core process in the LCA up to a maximum of 1% of the total mass of material inputs or 1% of the total energy content of fuels and energy carriers; various material inputs amounting, in combination, to <0.1% of total input materials were omitted from the LCA underpinning this EPD.

DATA SOURCES AND DATA QUALITY

TIME REPRESENTATIVENESS

Data characterising manufacturing of Libra Systems' metal framing components were collected for a continuous 12-month period between 1 September 2021 and 31 August 2022.

The data have been updated within the last 5 years. These data were checked to ensure that sufficient materials and water are included within the inputs to account for all products, wastes, and emissions.

BACKGROUND DATA

Background (generic) data were taken from the ecoinvent database (v3.6). This fulfils the EN 15804 requirement that generic data used in the LCA have been updated within the last 10 years.

Data quality has been reviewed for processes that contribute significantly to the overall LCA.

Other data were judged fit for purpose. No environmental impact potential stemming from proxy data exceeds 10% for any impact category.

ALLOCATION

In the background data, the ecoinvent default allocation is applied to all processes except those in which secondary materials are used, where the "cut-off" allocation is applied. This ensures that secondary materials are free of upstream burdens that arise prior to their reaching the "end of waste" state, in accordance with Section 6.3.4.2 of EN 15804.

ASSUMPTIONS AND ESTIMATES

Inputs to and outputs from the system are accounted for over a 100-year time period; long-term emissions are therefore omitted from the impact assessment part of the LCA.

The post-consumer recycled content of steel is assumed to be 10% as the minimum expected: all steelmaking uses some scrap, with 10% reported as a typical minimum in worldsteel's life cycle inventory methodology report for steel products (2017).

The "primary energy used as material" indicators (PERM; PENRM) are calculated using - as characterisation factors - published values for constituent materials which can yield energy on

combustion, where available, and from published calorific values where PE(N)RM values are not available. Calculations of PERM are based on NCV of 14MJ/kg for wood.

"Primary energy as fuel" indicators (PENRE, PERE) are calculated as the total primary energy demand minus primary energy used as material.

Modeling of electricity used by Libra Systems is based on the power generation mix reported by the supplier. The GWPTotal associated with the supply mix is 0.13 kgCO₂e/kWh.

MODULES C

Removal from site (Module C1) is assumed to be a manual operation, without identifiable energy or material inputs. No components for reuse are generated and all outputs are treated within the system boundary (in Module C3 or C4). Therefore no potential environmental impacts associated with this module are reported.

Modules C2, C3 and C4 are modelled using scenarios, reflecting road transport to a treatment site (C2); sorting and pressing of steel scrap as waste treatment (C3), followed by recycling of the steel. Relevant parameters are shown in the table below.

Scenario parameters: Module C2 (Transport)	
Parameter	Quantity & unit
Vehicle type	HGV
Vehicle load capacity	3.3t average load over outward & return journeys implied in dataset
Fuel type and consumption	diesel; 0.1l/km
Volume capacity utilisation factor	1
Capacity utilisation (including empty returns)	33%
Distance to site	50 km (road)
Bulk density of transported products	7800 kgm ³

MODULE D

The benefits reported in Module D are calculated for **net** flows of materials across the system boundary (materials to be recycled or recovered leaving the modelled system from the end-of-life stage minus recycled materials content of the product), as detailed in the table below; small amounts of timber recycled from wooden packaging are omitted.

Scenario parameters: Module D				Net output	
Output to recycling / recovery	Assumed fate	Displaced input flow	Quality factor	Quantity	Units
Ferrous metals	recycling	converter steel production - electric arc furnace operation	1	0.85	kg

ENVIRONMENTAL INDICATORS

This EPD contains environmental information for the declared unit of 1kg of Libra Systems' plasterboard metal framing components in the form of quantitative indicator values calculated using the methods specified in EN 15804:2019+A2, covering environmental impact potentials, resource and energy use, and waste generation for all declared modules; the A1 - A3 modules are shown on an aggregated basis.

POTENTIAL ENVIRONMENTAL IMPACTS (EN 15804:2019+A2) (CORE INDICATORS)		Unit	A1 - A3	C1	C2	C3	C4	D
Climate change – GWP fossil	GWP-fossil	kg CO ₂ eq	2.84E+00	0.00E+00	1.08E-02	2.32E-02	1.30E-04	-1.44E+00
Climate change – GWP biogenic	GWP-biogenic	kg CO ₂ eq	-7.66E-03	0.00E+00	-4.07E-06	-5.30E-06	6.75E-03	6.93E-03
Climate change – GWP land transformation	GWP-luluc	kg CO ₂ eq	2.66E-03	0.00E+00	4.67E-06	2.32E-05	1.23E-08	7.20E-04
Climate change – GWP total	GWP-total	kg CO ₂ eq	2.84E+00	0.00E+00	1.08E-02	2.17E-02	1.30E-04	-1.43E+00
Acidification potential	AP	mol H ⁺ eq	1.83E-02	0.00E+00	2.54E-05	1.80E-04	2.60E-07	-6.53E-03
Eutrophication – freshwater	EP-freshwater	kg P eq	1.60E-04	0.00E+00	1.04E-07	1.38E-06	8.84E-10	-8.41E-05
Eutrophication – marine	EP-marine	kg N eq	2.65E-03	0.00E+00	3.33E-06	1.88E-05	3.10E-08	-1.13E-03
Eutrophication – terrestrial	EP-terrestrial	mol N eq	5.05E-02	0.00E+00	3.69E-05	2.30E-04	3.41E-07	-1.35E-02
Photochemical ozone formation	POFP	kg NMVOC eq	1.01E-02	0.00E+00	1.78E-05	8.15E-05	3.17E-07	-6.12E-03
Ozone depletion	ODP	kg CFC-11 eq	1.92E-07	0.00E+00	2.37E-09	3.39E-09	2.69E-11	-4.48E-08
Depletion of abiotic resources – minerals & metals ¹	ADPMM	kg Sb eq	3.00E-03	0.00E+00	3.86E-07	1.30E-06	1.95E-10	-2.84E-05
Depletion of abiotic resources – fossil fuels ¹	ADPFF	MJ, ncv	4.43E+01	0.00E+00	1.62E-01	3.62E-01	1.80E-03	-1.76E+01
Water (user) deprivation potential ¹	WDP	m ³ world-eq deprived	4.31E+01	0.00E+00	1.91E-01	1.04E+00	3.90E-04	6.74E-01

¹ - The results of this environmental impact indicator shall be used with care because either the uncertainties associated with the results are high or there is limited experience with the indicator

POTENTIAL ENVIRONMENTAL IMPACTS (EN 15804:2019+A2) (ADDITIONAL)		Unit	A1 - A3	C1	C2	C3	C4	D
Climate change ² - biogenic excluded	GWP-GHG	kg CO ₂ eq	2.85E+00	0.00E+00	1.08E-02	2.17E-02	-6.62E-03	-1.43E+00

2 - GWP-GHG includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product.

This indicator is closely comparable to the GWP indicator originally defined in EN15804:2012+A1:2013

RESOURCE USE		Unit	A1 - A3	C1	C2	C3	C4	D
Renewable primary energy as energy carrier	PERE	MJ	3.09E+00	0.00E+00	2.72E-03	5.12E-02	1.37E-05	-1.21E+00
Renewable primary energy resources as material utilisation	PERM	MJ	7.00E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total renewable primary energy use ³	PERT	MJ	3.16E+00	0.00E+00	2.72E-03	5.12E-02	1.37E-05	-1.21E+00
Non-renewable primary energy as energy carrier	PENRE	MJ	4.43E+01	0.00E+00	1.62E-01	3.62E-01	1.80E-03	-1.72E+01
Non-renewable primary energy resources as material utilisation	PENRM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total non-renewable primary energy use ³	PENRT	MJ	4.43E+01	0.00E+00	1.62E-01	3.62E-01	1.80E-03	-1.72E+01
Use of secondary material	SM	kg	5.88E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.28E-01
Use of renewable secondary fuels	RSF	MJ	5.52E-02	0.00E+00	9.82E-05	4.30E-04	3.48E-07	-5.60E-04
Use of non-renewable secondary fuels	NRSF	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.66E+00
Net use of fresh water	NFW	m ³	3.59E-02	0.00E+00	1.36E-05	9.67E-05	4.92E-08	-4.73E-03

3 - sum of the two parameters above

WASTE PRODUCTION		Unit	A1 - A3	C1	C2	C3	C4	D
Hazardous waste disposed	HWD	kg	7.68E-01	0.00E+00	1.90E-04	1.68E-03	2.38E-06	-6.17E-01
Non-hazardous waste disposed	NHWD	kg	8.10E+00	0.00E+00	1.05E-02	9.00E-02	5.00E-02	-4.87E+00
Radioactive waste disposed	TRWD	kg	8.22E-05	0.00E+00	1.09E-06	2.04E-06	1.20E-08	-3.88E-06

OUTPUT FLOWS		Unit	A1 - A3	C1	C2	C3	C4	D
Components for re-use	CFR	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	MFR	kg	5.88E-01	0.00E+00	6.41E-05	9.50E-01	8.31E-07	8.31E-01
Materials for energy recovery	MER	kg	6.30E-04	0.00E+00	1.09E-06	5.71E-06	3.84E-09	-9.47E-05
Exported energy - electricity	EEE	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy - thermal	EET	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

For information, indicator values calculated using the methods prescribed in the earlier version of EN 15804 (EN 15804+A1:2013) are provided in the table below for the declared unit of 1kg of metal framing components; modules A1 - A3 are shown on an aggregated basis.

ENVIRONMENTAL IMPACTS (EN 15804:2013+A1)		Unit	A1 - A3	C1	C2	C3	C4	D
Global warming potential	GWP	kg CO ₂ -eq	2.74E+00	0.00E+00	1.07E-02	2.28E-02	1.30E-04	-1.37E+00
Depletion potential of the stratospheric ozone layer	ODP	kg CFC11- eq	1.70E-07	0.00E+00	1.89E-09	2.87E-09	2.13E-11	-4.06E-08
Acidification potential of land and water	AP	kg SO ₂ -eq	2.20E-02	0.00E+00	2.20E-05	1.60E-04	2.26E-07	-5.64E-03
Eutrophication potential	EP	kg PO ₄ ³⁻ -eq	2.05E-03	0.00E+00	2.16E-06	1.22E-05	2.13E-08	-6.70E-04
Formation potential of tropospheric ozone photochemical oxidants	POCP	kg ethene-eq	1.25E-03	0.00E+00	1.45E-06	8.07E-06	3.75E-08	-1.03E-03
Abiotic depletion potential for non-fossil resources	ADPE	kg Sb-eq	3.00E-03	0.00E+00	3.86E-07	1.30E-06	1.95E-10	-2.84E-05
Abiotic depletion potential for fossil resources	ADPF	MJ	4.14E+01	0.00E+00	1.58E-01	3.19E-01	1.79E-03	-1.76E+01

LCA INTERPRETATION

Indicator values obtained for mineral resource depletion (ADPFF, ADPMM), stratospheric ozone depletion (ODP), water use (NFW) and water deprivation potential (WDP) should be used with caution; all are subject to uncertainties in data or method which limit the scope for their use as the basis for comparisons.

No untreated wastes leave the modelled system, which includes waste treatment activities as required by EN 15804. The waste indicators HWD, NHWD and TRWD presented in this EPD therefore represent waste flows *within* the modelled system.

In this LCA the highest-quality data are for Libra Systems' own operations, but these are responsible for a small proportion of the reported indicators. Electricity use at the company's factory accounts for <0.5% of the GWPTotal indicator, and <1% even if a worst-case scenario for the supply mix is applied. Data representing upstream steel production and processing drive the overall results more strongly but are subject to higher uncertainties. This must be taken into account when using the results of the LCA.

References

BS EN 10346:2015 Continuously hot-dip coated steel flat products for cold forming

BS EN 14195:2014 Metal framing components for gypsum board systems. Definitions, requirements and test methods

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ISO 14001:2015 - Environmental management systems – Requirements with guidance for use

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