ENVIRONMENTAL PRODUCT DECLARATION

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

EOS STEEL FRAME

EOS FRAMING LTD.

Programme:	Programme operator:	EPD registration number:	Publication date:	Valid until:	Geographical scope:
The International EPD® System, www.environdec.com	**EPD International AB**	S-P-03337	2022-08-20	2027-08-17	United Kingdom

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.

GENERAL INFORMATION

MANUFACTURER INFORMATION

Manufacturer	EOS Framing Ltd.
Address	Heighington Lane Aycliffe Industrial Park Newton Aycliffe County Durham DL5 6QG
Contact details	eosenquiries@etexgroup.com
Website	https://www.eosframing.co.uk/

PRODUCT IDENTIFICATION

Product name	EOS Steel Frame
Additional label(s)	Stud & Track
Product number / reference	10012, 10016, 15012, 15016, 150(65)12, 150(65)16, 150(65)20, 20012,20016,20020, 25012,25016,25020.
Place(s) of production	Durham, United Kingdom
CPC code	4219 - Other structures (except prefabricated buildings) and parts of structures, of iron, steel or aluminium; plates, rods, angles, shapes, sections, profiles, tubes and the like, prepared for use in structures, of iron, steel or aluminium; props and similar equipment for scaffolding, shuttering or pit propping.

The International EPD System

EPDs within the same product category but from different programmes may not be comparable.

EPD INFORMATION

The EPD owner has the sole ownership, liability, and responsibility for the EPD. Construction products EPDs may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

EPD program operator	The International EPD System
EPD standards	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
Product category rules	The CEN standard EN 15804 serves as the core PCR. In addition, the Int'l EPD System PCR 2019:14 Construction products, version 1.11 (05.02.2021) is used.
EPD author	Dora Rebola, Evolusion Innovation
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
Verification date	2022-08-17
EPD verifier	Henrique Rogerio Antunes de Souza Junior, Enciclo
EPD number	S-P-03337
Publishing date	2022-08-20
EPD valid until	2027-08-17

PRODUCT INFORMATION

PRODUCT DESCRIPTION

Light gauge steel SFS to the construction industry for Infill, load bearing and modular applications, supplied as loose stud and track, or pre-assembled frame options. Designed, manufactured and supplied by EOS.

PRODUCT APPLICATION

Light gauge steel external façade Infill or load bearing systems.

TECHNICAL SPECIFICATIONS

Light gauge steel sections supplied as either loose stud and track or pre-assembled frame systems. Provides lightweight construction, and is pre-cut, notched and dimpled to allow for rapid installation and minimum requirement for cutting on site. The system reduces wastage on site, and noise on site, and our swaged end technology allows for a flusher board finish. Our steel is fully fire tested as part of the Thruwall and Thrubuild ETEX warranted systems.

PRODUCT STANDARDS

All materials are manufactured and designed in compliance with SCI NHBC Stage 1, and in Line with CE Marking execution class EXC4, and methods 1,2,3a and 3b of EN1090-1.

PHYSICAL PROPERTIES OF THE PRODUCT

Range of section sizes are: 65mm, 75mm, 100mm, 150mm, 200mm, 250mm. These can all be manufactured in 1.2mm gauge and 1.6mm gauge, and our 150mm, 200mm and 250mm can be manufactured in 2.0mm gauge.

ADDITIONAL TECHNICAL INFORMATION

Further information can be found at https://www.eosframing.co.uk/.

PRODUCT RAW MATERIAL COMPOSITION

Product and Packaging Material	Weight, kg	Post-consumer %	Renewable %	Country Region of origin
Steel	0.41	0	.925	Holland
Steel scrap	0.59	100	.925	Holland
Steel strap	0.001	100	100	Luxembo
Timber Stick	0.02	0	100	Holland

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

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.

Roll Forming is the process of shaping the coiled steel metal strip by passing it through the roll former machine which fabricates a series of specially designed shaped profiles, the process has high levels of repeatability and very tight tolerances. Profiles are made from Steel. The roll forming process can manufacture typical shaped profiles such as Channel, Angles, Boxes and Round Tube but is also able to form more complex profiles required for demanding technical solutions. The process is highly automated using modern control systems and can accommodate the piercing of holes and bespoke cut to length requirements of the customer. The process includes fully integrated automated and semi-automated packaging reducing handling. The finished product is stored in warehouse facilities prior to shipment to the customer.
The manufacturing process requires electricity and fuels for product movement and loading as well as heating. All waste produced at EOS is sold for recycling or is shipped to Energy Recovery Facilities. The loss of all material is considered. within this EPD Steel and plastic strappings are used for packaging and is required to ensure safe delivery of product to the customer.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final product manufacture to delivery to construction site (A4) which cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

The transportation distance is defined through the averaging distance to Manchester and London where 95% of the construction sites are located. Average distance of transportation from production plant to building site is assumed as 323 km and the transportation method is assumed to be lorry (Market for transport, freight, lorry 16-32 metric ton, euro4 compliant). Vehicle capacity utilization calculated by EOS is 96% this is governed by the pack size and shape of product and is achieved by utilizing multiple deliveries on the same vehicle. No vehicle is dedicated to a single delivery unless the volume or quantity dictates. In reality, the vehicle utilization does vary but the extent of transportation emissions in total is small, the variety in load is assumed negligible. As the vehicles are dedicated for EOS deliveries, the km figure calculated assumes the vehicle returns empty. Transportation does not cause losses as the product is strapped to prevent damage.

Module A5 is included in this scenario and based on a percentage of (40%) consumption for the forklift during the production stage.

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 source of energy is diesel fuel used by construction machines again (40%) reference consumption of the forklift in the construction stage. Consumption of natural resources in demolition process assumed to be negligible (C1).

It is assumed that 100% of the waste is collected and transported to the waste treatment centre.

Transportation distance to waste treatment facility is assumed as 30 km and the transportation method is assumed to be Market for transport, freight, lorry 16-32 metric ton, euro4 (C2).

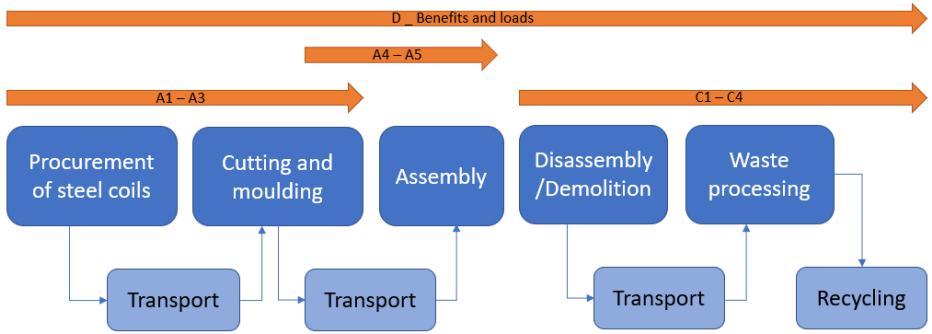
Approximately 95% of steel is assumed to be recycled based on World Steel Association, 2020 (C3).

It is assumed that the remaining 5 % of steel is taken to landfill for final disposal (C4).

Due to the recycling process, the end-of-life product is converted into recycled steel (D).

The reference service life of the product is 60 years, being the default life cycle of a building. The structures will last longer than that.

MANUFACTURING PROCESS



LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

Period for data	01.01.2020 - 31.12.2020

DECLARED AND FUNCTIONAL UNIT

Declared unit	1 kg of EOS LIGHT GAUGE STEEL FRAME
Mass per declared unit	1 kg
Reference service life	60 years

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	-

SYSTEM BOUNDARY

The scope of the EPD is cradle to gate which includes the following modules: A1 (Raw material supply), A2 (Transport) and A3 (Manufacturing) as well as C1 (Deconstruction), C2 (Transport at end-of-life), C3 (Waste processing) and C4 (Disposal). In addition, module D - benefits and loads beyond the system boundary is included.

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	D	D
x	x	x	x	x	MND	MND	MND	MND	MND	MND	MND	x	x	x	x	x	x	x
Geography, by two-letter ISO country code or regions. The International EPD System only.																		
EU	EU	EU	EU	EU	-	-	-	-	-	-	-	EU	EU	EU	EU	EU		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruct. /demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the EN 15804:2012+A2:2019 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.

This LCA study includes the provision of all materials, transportation, energy and emission flows, and end of life processing of product. The use phase is not covered, assuming there are no use emissions or replacements. All industrial processes from raw material acquisition and pre-processing, production, product distribution and installation, and end-of-life management are included. The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

The source of energy is diesel fuel used by construction machines (C1). It is assumed that 100% of the waste is collected and transported to the waste treatment centre. Transportation distance to treatment is assumed as 30 km and the transportation method is assumed to be lorry (C2). Approximately 95% of steel is assumed to be recycled based on World Steel Association, 2020 (C3). It is assumed that the remaining 5 % of steel is taken to landfill for final disposal (C4). Due to the recycling process, the end-of-life product is converted into recycled steel (D).

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation.

In this study, as per EN 15804, allocation is conducted in the following order.

1. Allocation should be avoided.

2. Allocation should be based on physical properties (e.g., mass, volume) when the difference in revenue is small.

3. Allocation should be based on economic values.

In this study allocation could not be avoided for raw materials, packaging, ancillary material, energy consumption and waste production as the information was only measured on factory or production process level. The inputs were allocated to studied product based on annual production volume (mass). The values for 1 kilogram of Light Gauge Steel framing are calculated by considering the total product weight per annual production. In the factory, several kinds of steel products are produced; since the production processes of these products are similar, the annual production percentages are taken into consideration for allocation. According to the ratio of the annual production of the declared product to the total annual production at the factory, the annual total raw materials, energy consumption, steel strap and the generated waste per the declared product are allocated. Subsequently, the product output fixed to 1 kg and the corresponding amount of product is used in the calculations. This LCA study is conducted in accordance with all methodological considerations, such as performance, system boundaries, data quality, allocation procedures, and decision rules to evaluate inputs and outputs. Allocation used in environmental data sources is aligned with the above.

Allocation used in Ecoinvent 3.6 environmental data sources follows the methodology ‘allocation, cut-off by classification’. This methodology is in line with the requirements of the EN 15804 - standard.

AVERAGES AND VARIABILITY

There is no average result considered in this study since the EPD refers to 1 kg of Light Gauge Steel Framing produced in one production plant.

The International EPD System additional data requirements

Data specificity and GWP-GHG variability for GWP-GHG for A1-A3.

Supply-chain specific data for GWP-GHG	> 80%
Variation in GWP-GHG between products	< 1%
Variation in GWP-GHG between sites	< 10%

ENVIRONMENTAL IMPACT DATA

Note: additional environmental impact data may be presented in annexes.

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	kg CO_2e	1,12E0	8,14E-2	8,38E-2	1,29E0	5,7E-2	3,03E-3	MND	MND	MND	MND	MND	MND	MND	3,03E-3	5,25E-3	2,59E-2	2,64E-4	-8,17E-1
GWP – fossil	kg CO_2e	1,12E0	8,13E-2	8,13E-2	1,28E0	5,76E-2	3,03E-3	MND	MND	MND	MND	MND	MND	MND	3,03E-3	5,24E-3	2,75E-2	2,63E-4	-8,23E-1
GWP – biogenic	kg CO_2e	-1,13E-3	2,9E-5	2,42E-3	1,32E-3	2,23E-5	8,43E-7	MND	MND	MND	MND	MND	MND	MND	8,43E-7	2,03E-6	-1,63E-3	5,22E-7	6,11E-3
GWP – LULUC	kg CO_2e	6,29E-4	3,34E-5	1,15E-4	7,77E-4	2,15E-5	2,56E-7	MND	MND	MND	MND	MND	MND	MND	2,56E-7	1,96E-6	3,23E-5	7,82E-8	2,28E-5
Ozone depletion pot.	kg CFC_{-11}e	6,83E-8	1,79E-8	9,69E-9	9,59E-8	1,26E-8	6,55E-10	MND	MND	MND	MND	MND	MND	MND	6,55E-10	1,15E-9	3,36E-9	1,08E-10	-2,19E-8
Acidification potential	mol H^+e	5,24E-3	8,18E-4	3,82E-4	6,44E-3	2,95E-4	3,17E-5	MND	MND	MND	MND	MND	MND	MND	3,17E-5	2,68E-5	3,05E-4	2,5E-6	-3,18E-3
EP-freshwater[3)]	kg Pe	5,68E-5	6,76E-7	4,3E-6	6,17E-5	5,67E-7	1,23E-8	MND	MND	MND	MND	MND	MND	MND	1,23E-8	5,16E-8	1,6E-6	3,18E-9	-3,31E-5
EP-marine	kg Ne	1,04E-3	2,25E-4	9,86E-5	1,36E-3	9,84E-5	1,4E-5	MND	MND	MND	MND	MND	MND	MND	1,4E-5	8,95E-6	6,77E-5	8,61E-7	-6,25E-4
EP-terrestrial	mol Ne	1,16E-2	2,5E-3	1,01E-3	1,51E-2	1,08E-3	1,54E-4	MND	MND	MND	MND	MND	MND	MND	1,54E-4	9,87E-5	7,8E-4	9,48E-6	-6,62E-3
POCP (“smog”)	kg NMVOCe	5,28E-3	6,88E-4	2,87E-4	6,25E-3	3,09E-4	4,22E-5	MND	MND	MND	MND	MND	MND	MND	4,22E-5	2,81E-5	2,13E-4	2,75E-6	-4,32E-3
ADP-minerals & metals	kg Sbe	7,71E-6	1,63E-6	1,77E-6	1,11E-5	1,53E-6	4,63E-9	MND	MND	MND	MND	MND	MND	MND	4,63E-9	1,39E-7	1,35E-6	2,41E-9	-8,17E-7
ADP-fossil resources	MJ	1,3E1	1,19E0	1,37E0	1,55E1	8,56E-1	4,17E-2	MND	MND	MND	MND	MND	MND	MND	4,17E-2	7,79E-2	3,38E-1	7,36E-3	-6,08E0
Water use[2)]	m^3e depr.	3,58E-1	4,19E-3	7,5E-2	4,37E-1	3,29E-3	7,79E-5	MND	MND	MND	MND	MND	MND	MND	7,79E-5	2,99E-4	5,34E-3	3,4E-4	-1,17E-1

1) GWP = Global Warming Potential; EP = Eutrophication potential; POCP = Photochemical ozone formation; ADP = Abiotic depletion potential. 2) 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 experienced with the indicator. 3) Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO_4e.

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	MJ	8,24E-1	1,3E-2	3,43E0	4,26E0	9,56E-3	2,26E-4	MND	MND	MND	MND	MND	MND	MND	2,26E-4	8,7E-4	4,67E-2	5,95E-5	8,07E-2
Renew. PER as material	MJ	0E0	0E0	9,42E-1	9,42E-1	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Total use of renew. PER	MJ	8,24E-1	1,3E-2	4,37E0	5,21E0	9,56E-3	2,26E-4	MND	MND	MND	MND	MND	MND	MND	2,26E-4	8,7E-4	4,67E-2	5,95E-5	8,07E-2
Non-re. PER as energy	MJ	1,3E1	1,19E0	1,37E0	1,55E1	8,56E-1	4,17E-2	MND	MND	MND	MND	MND	MND	MND	4,17E-2	7,79E-2	3,38E-1	7,36E-3	-6,08E0
Non-re. 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 non-re. PER	MJ	1,3E1	1,19E0	1,37E0	1,55E1	8,56E-1	4,17E-2	MND	MND	MND	MND	MND	MND	MND	4,17E-2	7,79E-2	3,38E-1	7,36E-3	-6,08E0

Secondary materials	kg	6,67E-1	0E0	1,46E-2	6,81E-1	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	3,85E-1
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	6,45E-3	2,04E-4	1,28E-2	1,94E-2	1,48E-4	3,69E-6	MND	MND	MND	MND	MND	MND	MND	3,69E-6	1,34E-5	1,43E-4	8,05E-6	-5,46E-3

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	2,21E-1	1,41E-3	6,64E-3	2,29E-1	1,12E-3	4,49E-5	MND	MND	MND	MND	MND	MND	MND	4,49E-5	1,02E-4	0E0	6,87E-6	-9,89E-2
Non-hazardous waste	kg	2,3E0	8,84E-2	2,23E-1	2,61E0	6,23E-2	4,8E-4	MND	MND	MND	MND	MND	MND	MND	4,8E-4	5,67E-3	0E0	5E-2	-1,11E0
Radioactive waste	kg	3,54E-5	8,06E-6	5,28E-6	4,88E-5	5,66E-6	2,92E-7	MND	MND	MND	MND	MND	MND	MND	2,92E-7	5,15E-7	0E0	4,87E-8	4,45E-6

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	5,04E-5	5,04E-5	0E0	0E0	MND	MND	MND	MND	MND	MND	MND	0E0	0E0	0E0	0E0	0E0
Materials for energy rec	kg	0E0	0E0	2,43E-5	2,43E-5	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 – GWP-GHG - THE INTERNATIONAL EPD SYSTEM

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG	kg CO_2e	1,12E0	8,13E-2	8,13E-2	1,28E0	5,76E-2	3,03E-3	MND	MND	MND	MND	MND	MND	MND	3,03E-3	5,24E-3	2,75E-2	2,63E-4	-8,23E-1

This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013) This indicator Is almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

SCENARIO DOCUMENTATION

Manufacturing energy scenario documentation

Scenario parameter	Value
Electricity data source and quality	Electricity production, wind, 1-3mw turbine, onshore (Reference product: electricity, high voltage)
Electricity kg CO_2e / kWh	0.0122

BIBLIOGRAPHY

ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations. Principles and procedures.

ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.

ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.

Ecoinvent database v3.6 (2019) and One Click LCA database.

EN 15804:2012+A2:2019 Sustainability in construction works – Environmental product declarations – Core rules for the product category of construction products.

Int'l EPD System PCR 2019:14 Construction products, version 1.11 (05.02.2021)

EOS Steel Frame LCA background report 21.07.2022

ABOUT THE MANUFACTURER

EOS is part of Etex Group, which brings together the expertise of major construction materials companies to develop a range of unique advanced unitised light steel frame systems that deliver certified and assured performance.

EPD AUTHOR AND CONTRIBUTORS

Manufacturer	EOS Framing Ltd.
EPD author	Dora Rebola, Evolusion Innovation
EPD verifier	Henrique Rogerio Antunes de Souza Junior, Enciclo
EPD program operator	The International EPD System
Background data	This EPD is based on Ecoinvent 3.6 (cut-off) and One Click LCA databases.
LCA software	The LCA and EPD have been created using One Click LCA Pre-Verified EPD Generator for Primary steel and aluminium

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 EN 15804, 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 background report (project report) for this EPD

Why does verification transparency matter? Read more online.

VERIFICATION OVERVIEW

Following independent third party has verified this specific EPD:

EPD verification information	Answer
Independent EPD verifier	Henrique Rogerio Antunes de
EPD verification started on	2022-06-09
EPD verification completed on	2022-08-17
Supply-chain specific data %	>80%
Approver of the EPD verifier	The International EPD System

Author & tool verification	Answer
EPD author	Dora Rebola, Evolusion
EPD author training completion	2022-04-04
EPD Generator module	Primary steel and aluminium
Independent software verifier	Ugo Pretato, Studio Fieschi &
Software verification date	2021-01-17

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 EN 15804:2012+A2:2019.

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.

Henrique Rogerio Antunes de Souza Junior, Enciclo

VERIFICATION AND REGISTRATION (ENVIRONDEC)

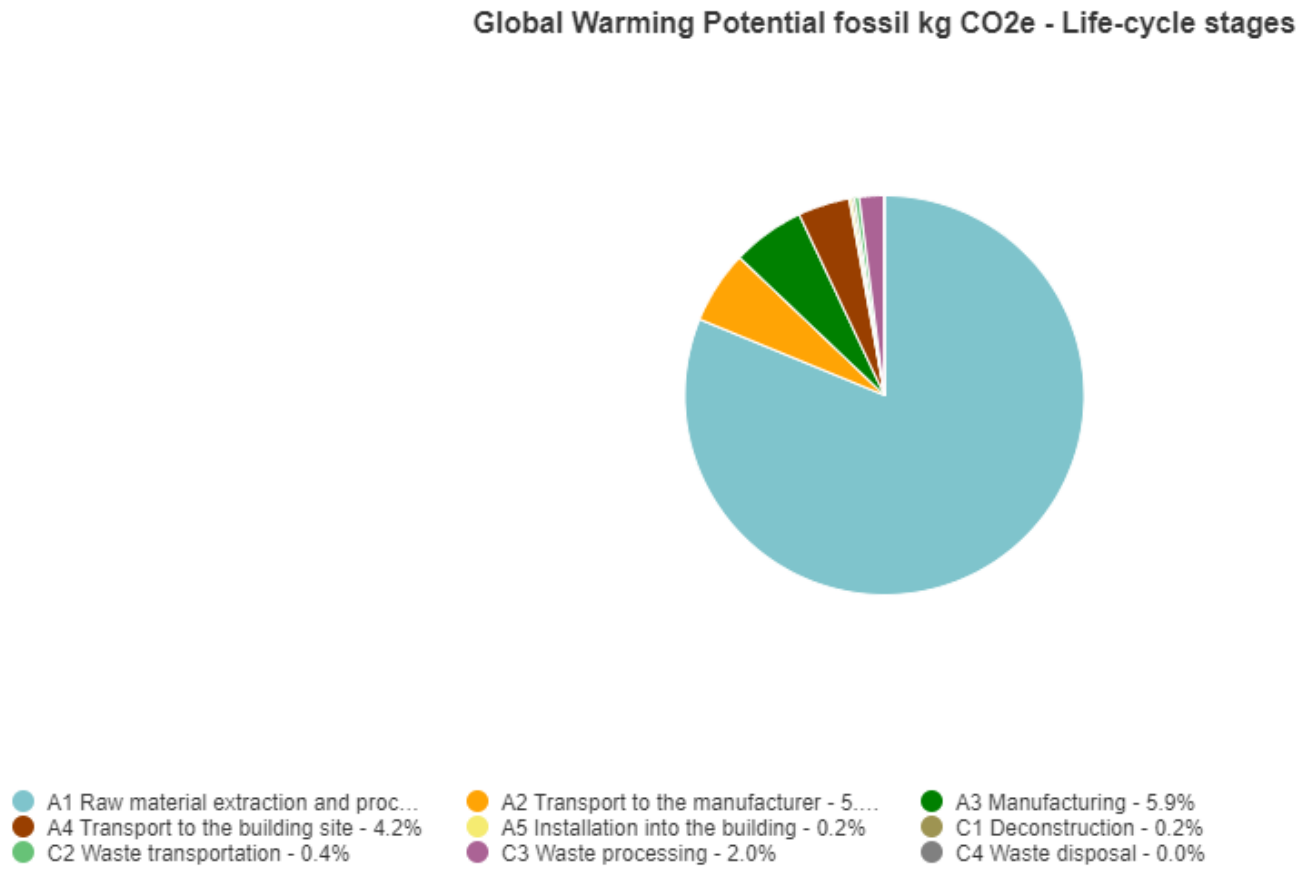
ISO standard ISO 21930 and CEN standard EN 15804 serves as the core Product Category Rules (PCR)	
PCR	PCR 2019:14 Construction products, version 1.11
PCR review was conducted by:	The Technical Committee of the International EPD® System. See www.environdec.com/TC for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.
Independent third-party verification of the declaration and data, according to ISO 14025:2006:	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☑ External verification
Third party verifier	Henrique Rogerio Antunes de Souza Junior, Enciclo
	Approved by: The International EPD® System Technical Committee, supported by the Secretariat
Procedure for follow-up during EPD validity involves third party verifier	☐ yes ☑ no

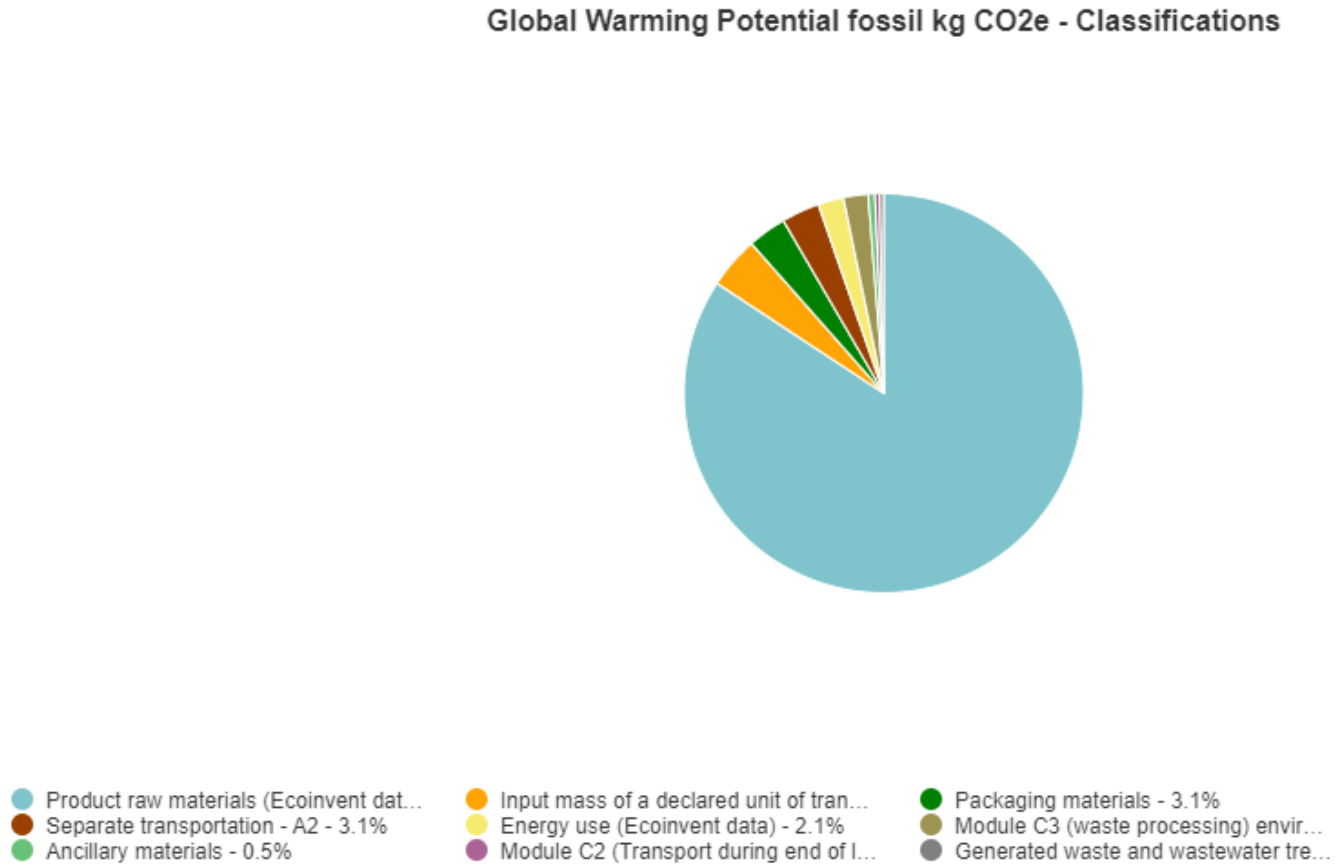
EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden, E-mail: info@environdec.com

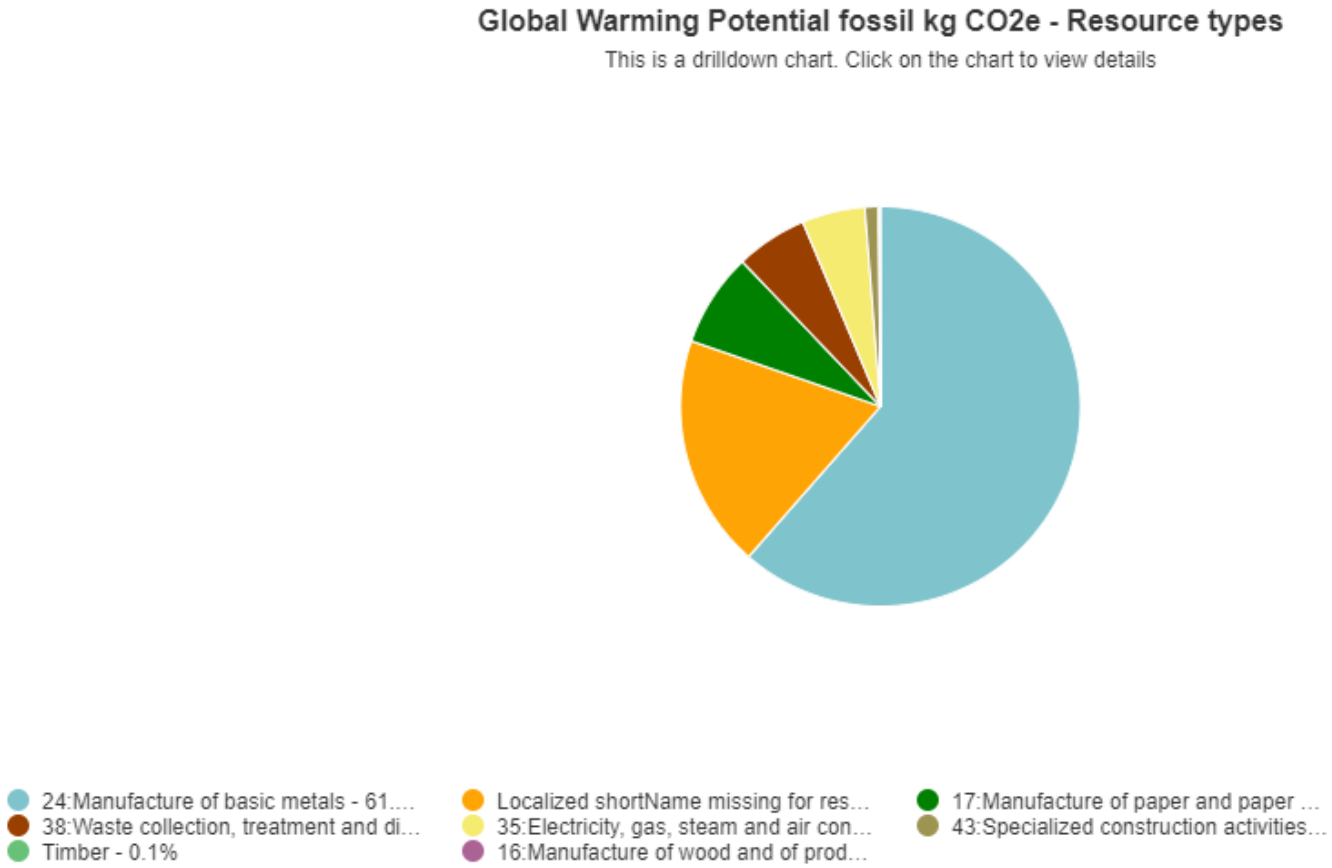
ANNEX 1 : ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

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	1,08E0	8,06E-2	1,45E-1	1,3E0	5,7E-2	3,01E-3	MND	MND	MND	MND	MND	MND	MND	3,01E-3	5,19E-3	2,7E-2	2,58E-4	-7,83E-1
Ozone depletion Pot.	kg CFC_{-11}e	6,25E-8	1,42E-8	9,11E-9	8,59E-8	1E-8	5,18E-10	MND	MND	MND	MND	MND	MND	MND	5,18E-10	9,11E-10	2,75E-9	8,59E-11	-1,94E-8
Acidification	kg SO_2e	3,9E-3	6,07E-4	3,05E-4	4,81E-3	2,14E-4	4,48E-6	MND	MND	MND	MND	MND	MND	MND	4,48E-6	1,95E-5	1,93E-4	1,04E-6	-2,49E-3
Eutrophication	kg PO_4^3e	2,26E-3	9,1E-5	1,92E-4	2,54E-3	5,02E-5	7,89E-7	MND	MND	MND	MND	MND	MND	MND	7,89E-7	4,57E-6	7,44E-5	2,02E-7	-1,38E-3
POCP (“smog”)	kg C_2H_4e	6,78E-4	1,91E-5	1,97E-5	7,17E-4	7,64E-6	4,61E-7	MND	MND	MND	MND	MND	MND	MND	4,61E-7	6,95E-7	8,96E-6	7,64E-8	-6,45E-4
ADP-elements	kg Sbe	7,71E-6	1,63E-6	1,77E-6	1,11E-5	1,53E-6	4,63E-9	MND	MND	MND	MND	MND	MND	MND	4,63E-9	1,39E-7	1,35E-6	2,41E-9	-8,17E-7
ADP-fossil	MJ	1,3E1	1,19E0	1,37E0	1,55E1	8,56E-1	4,17E-2	MND	MND	MND	MND	MND	MND	MND	4,17E-2	7,79E-2	3,38E-1	7,36E-3	-6,08E0

ANNEX 2 : LIFE-CYCLE ASSESSMENT RESULT VISUALIZATION




Global Warming Potential fossil kg CO2e - Classifications
Product raw materials (Ecoinvent dat...
Separate transportation - A2 - 3.1%
Ancillary materials - 0.5%
Input mass of a declared unit of tran...
Energy use (Ecoinvent data) - 2.1%
Module C2 (Transport during end of l...
Packaging materials - 3.1%
Module C3 (waste processing) envir...
Generated waste and wastewater tre...


Global Warming Potential fossil kg CO2e - Resource types
This is a drilldown chart. Click on the chart to view details
24:Manufacture of basic metals - 61....
38:Waste collection, treatment and di...
Timber - 0.1%
Localized shortName missing for res...
35:Electricity, gas, steam and air con...
16:Manufacture of wood and of prod...
17:Manufacture of paper and paper ...
43:Specialized construction activities...