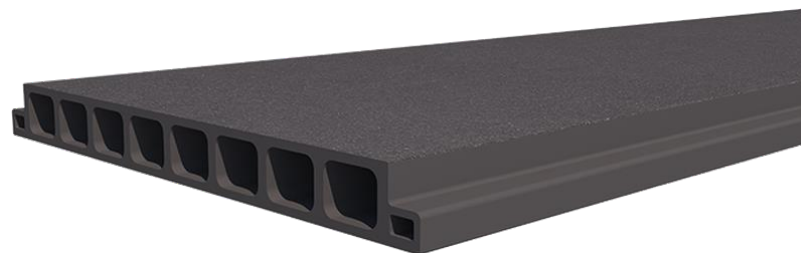


ENVIRONMENTAL PRODUCT DECLARATION

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

Structural Glass Reinforced Polymer Flooring and Profiles
Dura Composites Ltd



EPD HUB, HUB-1150

Publishing date 22 February 2024, last updated on 22 February 2024, valid until 22 February 2029.

GENERAL INFORMATION

MANUFACTURER

Manufacturer	Dura Composites Ltd
Address	Dura House, Telford Road, Clacton-on-sea, CO15 4LP, United Kingdom
Contact details	info@duracomposites.com
Website	www.duracomposites.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	Construction 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	Dr James Rogalski, Dura Composites
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☒ External verification
EPD verifier	Magaly González Vázquez, 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	Structural Glass Reinforced Polymer Flooring and Profiles
Additional labels	Dura Slab, Dura Platform, Dura Profile
Product reference	-
Place of production	Manufacture: Jiangsu Province, China. End of life - United Kingdom.
Period for data	Calendar Year 2022
Averaging in EPD	No averaging
Variation in GWP-fossil for A1-A3	0 %

ENVIRONMENTAL DATA SUMMARY

Declared unit	1
Declared unit mass	1 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	3.88E+00
GWP-total, A1-A3 (kgCO ₂ e)	3.97E+00
Secondary material, inputs (%)	0.823
Secondary material, outputs (%)	0.0
Total energy use, A1-A3 (kWh)	18.3
Total water use, A1-A3 (m ³ e)	4.39E-02

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

Dura Composites is a leading global supplier of composite products for flooring, structures and façades, which are ideal for the industrial, construction, rail, marine, landscaping & architectural sectors as a long-lasting and cost-effective replacement for wood, steel and concrete.

Our experienced team has extensive knowledge and practical experience of fibreglass reinforced plastic, composite timber and other related emerging materials. The range of products on offer from Dura Composites is vast, from floor walkway grating, garden decking, building cladding and industrial handrailing to service risers and trench covers. All products offer customers a low life cycle cost thanks to their long life expectancy and low maintenance requirements

In 2017 and in 2020, Dura Composites was awarded the Queen's Award for Enterprise in recognition of our achievements at the forefront of composite material technology. Dura Composites' products are also available through a well-established global distribution network

PRODUCT DESCRIPTION

Dura pultrusions are a collection of heavy duty, corrosion resistant fibreglass profiles suitable for a wide range of applications. The ability of Dura pultrusions to guard against deterioration from industrial chemicals and environmental factors make it a logical and cost-effective alternative to carbon, steel, aluminium, wood or other conventional materials. Dura products provides the engineer with a high degree of design freedom and offers exceptional material properties for a wide range of applications.

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

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	0	-
Minerals	73.19	China
Fossil materials	26.80	China
Bio-based materials	0	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0.0086

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1
Mass per declared unit	1 kg
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			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.

Manufacturing and Packaging of the product predominantly consists of glass fibres and a polyester resin. The manufacturing process (pultrusion) is performed by feeding fibres through a resin bath which impregnates the fibres before being formed through a die. The heated die cures the resin to form the completed fibreglass product. The continuous process is batch

produced with products cut to set lengths and stacked on timber bearers, ready for shipment wrapped in a LDPE shroud.

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.

Additional diesel fuel used for handling of goods at our storage facility has also been accounted for material handling purposes.

There are PET and PE packaging materials which are recycled at end of use, with timber bearers being sent for incineration at the end of life. Recycled raw materials lead to avoided virgin material production, while the energy recovered from incineration displaces electricity and heat production (D).

PRODUCT USE AND MAINTENANCE (B1-B7)

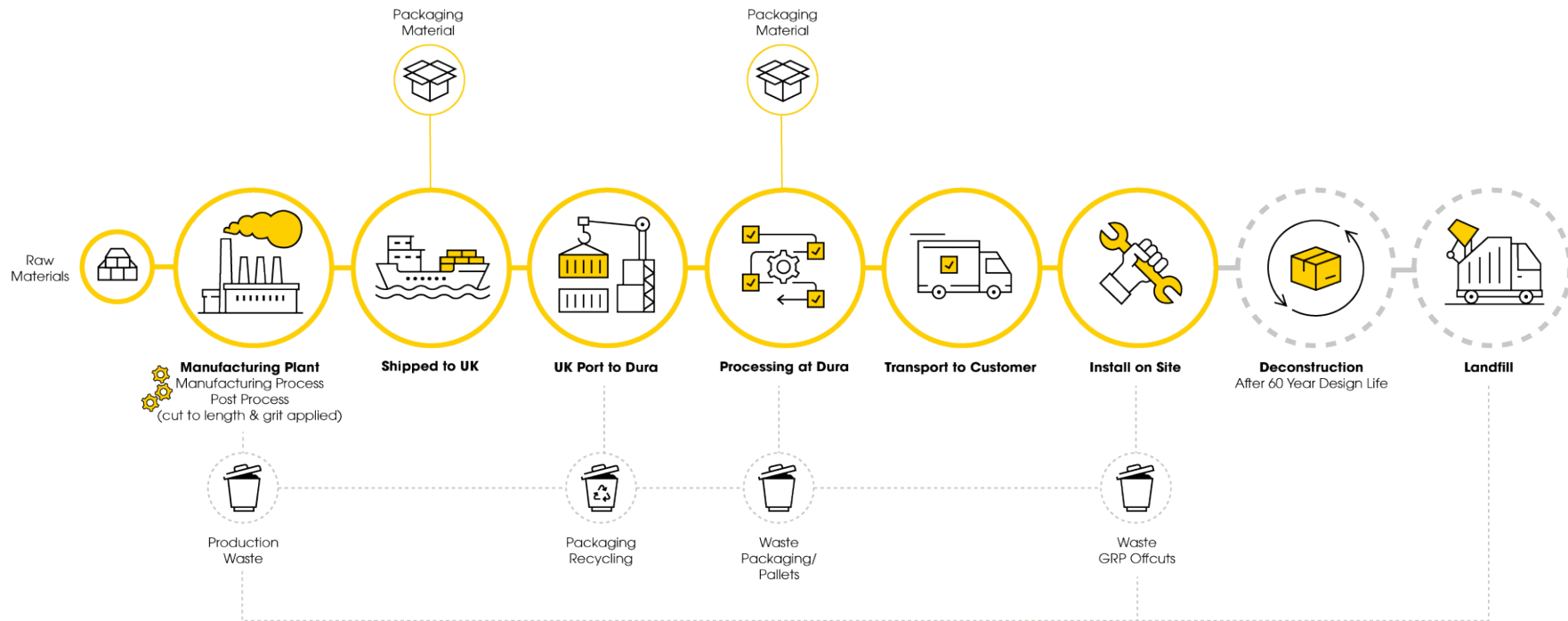
No product use is calculated in this EPD. Not applicable.

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

PRODUCT END OF LIFE (C1-C4, D)

Consumption of energy in the de-construction process is considered. It is assumed that the waste is collected separately and transported to the waste treatment centre. Transportation distance to treatment is assumed as 100 km and the transportation method is assumed to be lorry. 100% of the installed material is assumed to be landfilled.

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	No allocation
Ancillary materials	No allocation
Manufacturing energy and waste	No allocation

AVERAGES AND VARIABILITY

Type of average	No averaging
Averaging method	Not applicable
Variation in GWP-fossil for A1-A3	0 %

No averaging used in this EPD.

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. The EPD Generator uses Ecoinvent v3.8, Plastics Europe, Federal LCA Commons and One Click LCA databases 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 ₂ e	3.69E+00	2.84E-01	-1.20E-02	3.97E+00	3.64E-02	3.46E-02	MND	MND	MND	MND	MND	MND	MND	8.78E-03	1.63E-02	0.00E+00	1.55E-03	-2.66E-02
GWP – fossil	kg CO ₂ e	3.57E+00	2.84E-01	2.01E-02	3.88E+00	3.64E-02	3.07E-03	MND	MND	MND	MND	MND	MND	MND	8.78E-03	1.63E-02	0.00E+00	1.05E-02	-2.67E-02
GWP – biogenic	kg CO ₂ e	9.55E-03	0.00E+00	-3.21E-02	-2.26E-02	0.00E+00	3.16E-02	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	-8.99E-03	4.53E-05
GWP – LULUC	kg CO ₂ e	1.10E-01	1.84E-04	2.35E-05	1.10E-01	1.36E-05	1.20E-06	MND	MND	MND	MND	MND	MND	MND	4.84E-07	6.51E-06	0.00E+00	1.07E-05	-3.01E-05
Ozone depletion pot.	kg CFC ₁₁ e	3.98E-07	5.80E-08	1.26E-08	4.68E-07	9.07E-09	4.95E-10	MND	MND	MND	MND	MND	MND	MND	1.91E-09	3.77E-09	0.00E+00	3.20E-09	-1.31E-08
Acidification potential	mol H ⁺ e	2.00E-02	7.13E-03	1.02E-04	2.72E-02	1.16E-04	2.41E-05	MND	MND	MND	MND	MND	MND	MND	1.24E-04	4.63E-05	0.00E+00	8.88E-05	-1.67E-04
EP-freshwater ²⁾	kg Pe	1.10E-04	1.39E-06	5.50E-07	1.12E-04	2.60E-07	3.32E-08	MND	MND	MND	MND	MND	MND	MND	1.18E-08	1.16E-07	0.00E+00	1.63E-07	-8.46E-07
EP-marine	kg Ne	3.96E-03	1.78E-03	2.39E-05	5.76E-03	2.56E-05	1.01E-05	MND	MND	MND	MND	MND	MND	MND	5.55E-05	9.23E-06	0.00E+00	3.03E-05	-2.21E-05
EP-terrestrial	mol Ne	4.00E-02	1.97E-02	2.50E-04	5.99E-02	2.84E-04	1.08E-04	MND	MND	MND	MND	MND	MND	MND	6.08E-04	1.03E-04	0.00E+00	3.33E-04	-2.54E-04
POCP (“smog”) ³⁾	kg NMVOCe	2.21E-02	5.16E-03	8.44E-05	2.74E-02	1.12E-04	3.01E-05	MND	MND	MND	MND	MND	MND	MND	1.59E-04	3.94E-05	0.00E+00	9.64E-05	-8.26E-05
ADP-minerals & metals ⁴⁾	kg Sbe	1.78E-04	5.39E-07	3.68E-07	1.78E-04	8.91E-08	2.19E-08	MND	MND	MND	MND	MND	MND	MND	6.22E-09	5.89E-08	0.00E+00	3.54E-08	-1.19E-07
ADP-fossil resources	MJ	6.34E+01	3.72E+00	4.53E-01	6.76E+01	5.81E-01	3.98E-02	MND	MND	MND	MND	MND	MND	MND	1.16E-01	2.42E-01	0.00E+00	2.43E-01	-5.20E-01
Water use ⁵⁾	m ³ e depr.	1.75E+00	1.29E-02	2.26E-02	1.78E+00	2.68E-03	1.33E-04	MND	MND	MND	MND	MND	MND	MND	1.60E-04	1.13E-03	0.00E+00	1.42E-03	-7.18E-03

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.

ADDITIONAL (OPTIONAL) 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
Particulate matter	Incidence	2.01E-07	1.38E-08	1.21E-09	2.16E-07	4.22E-09	5.95E-10	MND	MND	MND	MND	MND	MND	MND	1.61E-10	1.31E-09	0.00E+00	1.78E-09	-1.53E-09
Ionizing radiation ⁶⁾	kBq U235e	2.33E-01	1.73E-02	2.10E-03	2.52E-01	3.00E-03	1.47E-04	MND	MND	MND	MND	MND	MND	MND	5.29E-04	1.27E-03	0.00E+00	1.16E-03	-4.14E-03
Ecotoxicity (freshwater)	CTUe	1.09E+02	2.67E+00	3.31E-01	1.12E+02	4.83E-01	3.87E-02	MND	MND	MND	MND	MND	MND	MND	6.40E-02	2.02E-01	0.00E+00	1.80E-01	-4.94E-01
Human toxicity, cancer	CTUh	4.07E-09	1.54E-10	9.57E-12	4.24E-09	1.26E-11	3.54E-12	MND	MND	MND	MND	MND	MND	MND	7.12E-13	6.22E-12	0.00E+00	7.59E-12	-8.65E-12
Human tox. non-cancer	CTUh	1.40E-07	2.03E-09	2.55E-10	1.43E-07	4.92E-10	7.80E-11	MND	MND	MND	MND	MND	MND	MND	9.64E-11	1.98E-10	0.00E+00	1.20E-10	-2.38E-10
SQP ⁷⁾	-	1.68E+01	1.35E+00	2.76E+00	2.09E+01	6.77E-01	1.61E-02	MND	MND	MND	MND	MND	MND	MND	1.47E-02	1.72E-01	0.00E+00	5.93E-01	-1.47E-01

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator; 7) SQP = Land use related impacts/soil quality.

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	4.52E+00	3.17E-02	6.88E-02	4.62E+00	7.53E-03	8.11E-04	MND	MND	MND	MND	MND	MND	MND	3.27E-04	3.53E-03	0.00E+00	4.22E-03	-4.71E-02
Renew. PER as material	MJ	0.00E+00	0.00E+00	3.31E-01	3.31E-01	0.00E+00	-3.31E-01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renew. PER	MJ	4.52E+00	3.17E-02	4.00E-01	4.95E+00	7.53E-03	-3.30E-01	MND	MND	MND	MND	MND	MND	MND	3.27E-04	3.53E-03	0.00E+00	4.22E-03	-4.71E-02
Non-re. PER as energy	MJ	5.71E+01	3.72E+00	2.78E-01	6.11E+01	5.81E-01	3.98E-02	MND	MND	MND	MND	MND	MND	MND	1.16E-01	2.42E-01	0.00E+00	2.43E-01	-3.29E-01
Non-re. PER as material	MJ	6.31E+00	0.00E+00	-3.30E-01	5.98E+00	0.00E+00	-1.75E-01	MND	MND	MND	MND	MND	MND	MND	0.00E+00	0.00E+00	0.00E+00	-5.80E+00	-1.46E-01
Total use of non-re. PER	MJ	6.34E+01	3.72E+00	-5.21E-02	6.71E+01	5.81E-01	-1.36E-01	MND	MND	MND	MND	MND	MND	MND	1.16E-01	2.42E-01	0.00E+00	-5.56E+00	-4.75E-01
Secondary materials	kg	8.23E-03	1.57E-03	8.09E-05	9.88E-03	1.64E-04	8.87E-06	MND	MND	MND	MND	MND	MND	MND	6.68E-06	8.25E-05	0.00E+00	8.75E-05	9.63E-04
Renew. secondary fuels	MJ	3.14E-04	7.56E-06	1.32E-04	4.53E-04	1.44E-06	3.80E-08	MND	MND	MND	MND	MND	MND	MND	9.88E-08	9.08E-07	0.00E+00	3.37E-06	-1.30E-07
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	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of net fresh water	m³	4.31E-02	3.09E-04	5.68E-04	4.39E-02	7.71E-05	1.03E-05	MND	MND	MND	MND	MND	MND	MND	4.08E-06	3.09E-05	0.00E+00	2.62E-04	-2.08E-04

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	2.35E-01	5.16E-03	1.25E-03	2.41E-01	6.23E-04	2.11E-04	MND	MND	MND	MND	MND	MND	MND	4.08E-05	2.76E-04	0.00E+00	0.00E+00	-1.69E-03
Non-hazardous waste	kg	4.16E+00	5.47E-02	8.21E-02	4.30E+00	1.08E-02	2.27E-02	MND	MND	MND	MND	MND	MND	MND	4.68E-04	4.90E-03	0.00E+00	1.00E+00	-5.86E-02
Radioactive waste	kg	1.11E-04	2.59E-05	4.36E-06	1.41E-04	4.01E-06	2.15E-07	MND	MND	MND	MND	MND	MND	MND	8.45E-07	1.67E-06	0.00E+00	0.00E+00	-1.24E-06

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	0.00E+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
Materials for recycling	kg	0.00E+00	0.00E+00	3.74E-03	3.74E-03	0.00E+00	4.50E-03	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	0.00E+00	0.00E+00	3.73E-06	3.73E-06	0.00E+00	2.00E-02	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	1.53E-07	1.53E-07	0.00E+00	2.32E-01	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	3.55E+00	2.81E-01	1.93E-02	3.85E+00	3.60E-02	3.01E-03	MND	MND	MND	MND	MND	MND	MND	8.62E-03	1.61E-02	0.00E+00	1.03E-02	-2.56E-02
Ozone depletion Pot.	kg CFC ₁₁ e	3.65E-07	4.59E-08	8.52E-09	4.19E-07	7.19E-09	3.95E-10	MND	MND	MND	MND	MND	MND	MND	1.51E-09	2.99E-09	0.00E+00	2.54E-09	-8.95E-09
Acidification	kg SO ₂ e	1.65E-02	5.70E-03	8.21E-05	2.23E-02	9.40E-05	1.76E-05	MND	MND	MND	MND	MND	MND	MND	8.83E-05	3.80E-05	0.00E+00	6.73E-05	-1.43E-04
Eutrophication	kg PO ₄ ^{3p}	8.95E-03	6.66E-04	2.77E-05	9.64E-03	1.99E-05	1.65E-05	MND	MND	MND	MND	MND	MND	MND	1.97E-05	8.19E-06	0.00E+00	2.15E-05	-3.12E-05
POCP ("smog")	kg C ₂ H ₄ e	6.19E-03	1.49E-04	7.24E-06	6.35E-03	4.38E-06	6.37E-07	MND	MND	MND	MND	MND	MND	MND	2.62E-06	1.92E-06	0.00E+00	2.74E-06	-7.49E-06
ADP-elements	kg Sbe	3.95E-05	5.27E-07	3.67E-07	4.04E-05	8.66E-08	2.19E-08	MND	MND	MND	MND	MND	MND	MND	6.17E-09	5.75E-08	0.00E+00	3.42E-08	-1.19E-07
ADP-fossil	MJ	6.34E+01	3.72E+00	4.44E-01	6.76E+01	5.81E-01	3.98E-02	MND	MND	MND	MND	MND	MND	MND	1.16E-01	2.42E-01	0.00E+00	2.43E-01	-5.16E-01

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.

Magaly González Vázquez, as an authorized verifier acting for EPD Hub Limited

22.02.2024

