

Environmental Product Declaration



In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

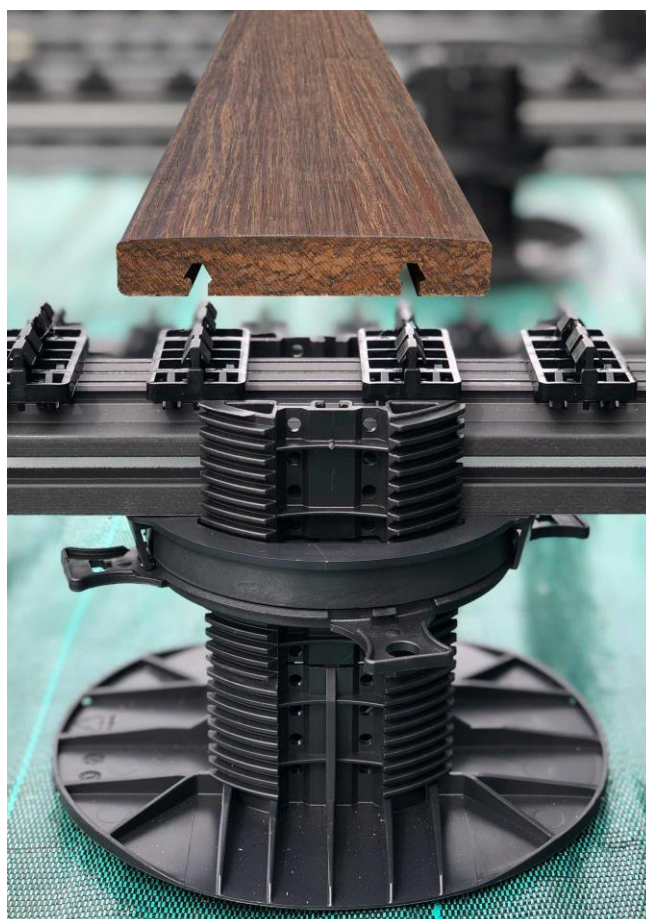
GRAD[®] pedestal Top Lift[®] for decking

from



Programme:	The International EPD [®] System, www.environdec.com
Programme operator:	EPD International AB
EPD registration number:	EPD-IES-0016984
Publication date:	2024-10-08
Valid until:	2029-10-07

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

Programme information

Programme:	The International EPD [®] System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	info@environdec.com

Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): PCR 2019:14 v1.3.4 Construction Products, valid until 2024-12-20, UN CPC code(s) – 547 Building completion and finishing services
PCR review was conducted by: The Technical Committee of the International EPD System. The review panel may be contacted via info@environdec.com . Chair of the PCR review: Claudia A Peña
Life Cycle Assessment (LCA)
LCA accountability: Alternative Carbone, 10 rue de la moyenne Corniche, 67210 Obernai – FRANCE
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: <input checked="" type="checkbox"/> EPD verification by individual verifier Third-party verifier: Marcel Gómez Consultoria Ambiental, info@marcelgomez.com , www.marcelgomez.com . Approved by: The International EPD [®] System
Procedure for follow-up of data during EPD validity involves third party verifier: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No [Procedure for follow-up the validity of the EPD is at minimum required once a year with the aim of confirming whether the information in the EPD remains valid or if the EPD needs to be updated during its validity period. The follow-up can be organized entirely by the EPD owner or together with the original verifier via an agreement between the two parties. In both approaches, the EPD owner is responsible for the procedure being carried out. If a change that requires an update is identified, the EPD shall be re-verified by a verifier]

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 information

Owner of the EPD:

BURGER & Cie
Zone industrielle Bois l'Abbesse
68 660 LIEPVRE
FRANCE

contact@grad-system.com

Contact:

Margot KAPPS, Marketing Project Manager, mkapps@grad-system.com

Description of the organisation:

BURGER ET CIE carries out several activities marketed under different trademarks, whose products are regularly registered with the National Institute of Intellectual Property. Grad[®] is one of these brands. Under this trademark, BURGER ET CIE designs and markets an invisible fixing system for decking and cladding through various distribution channels in France and abroad, in particular to professionals specialising in exterior and interior design, to retailers, to manufacturers of decking and cladding and directly to private individuals via its website.

In addition to the supply of materials, Grad[®] offers a real technical support service to customers in their projects. For example, Grad[®] does not supply the system for anchoring the rails to their supports but advises its customers in choosing the type of fasteners and their characteristics.



Product-related or management system-related certifications:

An internal control plan ensures the conformity of the products manufactured and marketed. The conformity of our system is tested in collaboration with accredited laboratories, and we work closely with engineering firms. Our polypropylene (PP) supplier is ISO 9001 (Certificat ISO 9001 : 2015 - RESINEX :n°BE13/223575259.08).

Name and location of production site(s):

Polypropylene granulate production : RAVAGO Group
MORNICO – ITALY
ARENDONK – BELGIUM
TARRAGONA - SPAIN

PP injection moulding and final assembly:

BURGER & CIE, Z.I Bois l'Abbesse, 68 660 Lièpvre – France

Product information

Product name:

GRAD[®] Decking pedestals (Top Lift[®]) in configuration “pedestal (Top Lift[®]) + 4 pairs of boosters (UP+) and 2 stabilisers (TOP+)”

A polypropylene pedestal which guarantees a perfectly flat and even structure!

The Top Lift[®] pedestal can be used on sealing layers, on naturally stable ground, on stabilised ground (rammed gravel) and on hard grounds (concrete, tiling). It enables easy level adjustment thanks to its nut.

Product identification:

GRAD[®] pedestals are parts of invisible fastening system for decking distributed by Burger & Cie. Invisibility is made possible by an innovative clip-on decking concept through plastic clips fixed on aluminium rails (Patent n°3018838 – Institut National de la Propriété Intellectuelle).

The recognized technical advantages of this innovation are:

- Rigid fastening of the decking concept,
- a parallel arrangement of the decking,
- Waterproofing (effective protection against rotting and fungal decay, increasing the durability of the wood),
- Easy to install and remove,
- a removable means of fixing the decking system,
- Aesthetic benefits,
- easier to install/use/dismantle than traditional screw fastening (no pre-drilling required).

This EPD concerns only the pedestals: boards and aluminium rails with clips are not covered by this EPD.



Decking

Product description:

Even though this system is adjustable thanks to its boosters and stabilisers, this EPD covers a single configuration of the GRAD® support systems for decking which allows a lifting height of 200 to 235 mm. The product under this study consists of:

- A pedestal with 3 compounds:
 - A plate: Base of the pedestal. Its design complies with the pedestal definition in DTU 51.4 and in the “règles professionnelles de la CSFE”. Plastic material: polypropylene (PP +20% talc),
 - A tray: surface of the pedestal on which the rail rests. The plate is fitted with lugs that hold the rail to the pedestal via grooves on either side of the rail. Plastic material: polypropylene (PP +20% talc).
 - A Nut: component used to adjust the height of the pedestal and thus the flatness of the decking. Plastic material: polypropylene (PP +30% glass fiber),

- Pairs of boosters: elements to increase the initial height of the pedestal. Adjustable range from 200 to 235 mm. Plastic material: polypropylene (PP + 20% talc)
- Stabiliser: elements to stiffen the structure of the pedestal from 4 pairs of boosters. Plastic material: polypropylene (PP +20% talc).

PEDESTAL'S BASIC CONFIGURATION

COMPONENTS	WEIGHT (g)	MATERIAL
1 - Plate	153,8	
2 - Tray	76,4	
3 - Booster	24,7	Polypropylene + 20% talc
4 - Stabiliser	31,3	
5 - Slope corrector	12,4	Out of scope
6 - Nut	65,6	Polypropylene + 30% fibreglass

Top Lift Pedestal	Top Lift min	Top Lift max	Adjustment ranges for Pedestal + Boosters + Stabilisers																			
			35 mm	55 mm	56 mm	100 mm	101 mm	145 mm	146 mm	190 mm	191 mm	199 mm	200 mm	235 mm	236 mm	249 mm	250 mm	280 mm	281 mm	316 mm	317 mm	325 mm
Up+ Boosters Quantity (per pair)	0	1	2	3	4	5	6															
Top+ Stabilisers Quantity (per unit)			0								2	2	3	3	4							

In order to ensure consistency with the functional unit used for the FDES /EPD of structural and non-structural rails for GRAD[®] fastening system, the number of pedestal included in the perimeter of the functional unit is related to one linear meter of rail.

The expected service lifetime is 20 years. This life expectancy of GRAD[®] products is based in part on ageing tests and laboratory trials, as well as feedback from field experience.

GRAD[®] systems comply with the following requirements:

- NF DTU 51.4 "Travaux de bâtiment - Platelage extérieur en bois"
- Règles Professionnelles de la CSFE pour la conception et la réalisation des toitures-terrasses et balcons étanchés avec protection par platelage en bois.

UN CPC code: 547 Building completion and finishing services

Geographical scope:

Production and assembly of components and the final product are made in several countries, mostly in western Europe.

The use stage and end-of-life scenarios are based on main customer location which is Europe.

LCA information

Functional unit (FU) / declared unit:

The declared unit is "To insure maintain and elevation of one linear meter of fastening system for decking in accordance with GRAD[®] manufacturer's recommendations", including packaging.

Product	Main Components	Materials	Unit Weight [g]	Average number by linear meter	Total weight per FU [g]
Pedestal 200 – 235 mm	Tray	PP + 20% talc	76.4	1.67	127.6
	Plate	PP + 20% talc	153.8	1.67	256.8
	Nut	PP + 30% glass fiber	65.6	1.67	109.6
	Boosters (pair)	PP + 20% talc	49.4	6.68	330.2
	Stabiliser	PP + 20% talc	31.3	3.34	104.6

Product packaging and manufacturing steps are included in the assessment.

Reference service life: 20 years

Reference year: 2022

Database(s) and LCA software used: OPEN LCA v2 and Ecoinvent v3.9.1 - 15804+A2 (20230629).
based on EF3.1

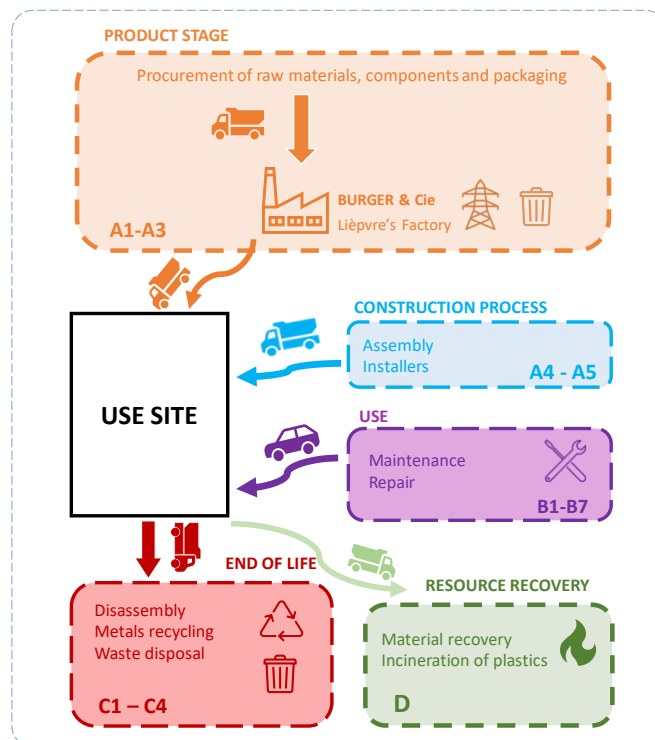
Description of system boundaries: Cradle to grave and module D (A + B + C + D)

Heating consumption which is specific to administrative buildings have not been included in the calculation, as well as production, maintenance and end of life of capital goods (or infrastructure) as their renewal frequency is more than 1 year, as allowed by the standard. For GRAD[®], these are the buildings, equipment and tools used in the production of fastening systems for decking and cladding.

Most of the consumables were included in the calculation, despite their very low mass, because their data were considered available. Only dry ice was not included as there was no relevant model to integrate.

Flows associated with transporting Lièpvre employees (homeworking) and sales staff have been excluded from the system boundaries.

Flow chart:



Product Stage (A1-A3)

Products manufactured at the Lièpvre plant require the supply of raw materials and components, as well as their packaging:

- Supply of polypropylene granules in two variants:
 - With 20% talc and carbon black colouring agent
 - With 30% glass fibre and carbon black colouring agent
- The supply models were based on data provided by the supplier (location of sites and percentage of recycled PP incorporated)
- Injection moulding at the Lièpvre site: model based on GRAD[®] data and process loss rate
- Packaging supply with their transport from the supplier to Liepvre

The manufacturing and assembly stage includes all flows, other than raw materials, required to operate the Lièpvre plant to produce the GRAD[®] pedestals, boosters and stabilisers down to the functional unit.

This step includes:

- The plant's energy consumption : This is exclusively electrical, supplied by the RTE network (mix France 2021).
- Plant's water consumption : the use of consumables: Brake cleaner, Glue, Grease/lubricants, lubricant, degreaser.
- Waste linked to factory production losses and raw materials packaging.

Transport to Building (A4)

The product leaving the factory (including packaging) is transported from the Lièpvre factory to the installers and/or installation sites. All data concerning installation sites and modes of transport have been provided by Burger & Cie for the year 2022. 95% of installation sites are located in Europe. The remainder is split between North America, Asia and the Middle East and has been integrated too in a worst-case approach (use of air transport).

Type of transport are :

- Road: lorry 16-32 metric tons with an averaged load factor of 36.6%
- Sea: container ship, 43 000tons, capacity utilisation factor : 70%
- Air: 57.3% long haul / 29.2% medium haul / 9.5% short haul and 4% very short haul, with an average load factor of 80%.

Installation into Building (A5)

The installation stage includes the installer travelling 50km and waste treatment from packaging, including their transport. No energy consumption is needed to install pedestals.

Use Phase (B1-B7)

The pedestals do not require maintenance/replacement during their service life. Therefore, no flows are considered for the use phase.

End-of-life stage (C1-C4)

Pedestals are assumed to be dismantled using the same amount of travelling used for installation. No energy is required to disassemble in module C1.

Transportation of dismantled pedestals is made by road, with a lorry 16-32 metric tons with an averaged load factor of 36.6% in C2 and with a distance of 71.5km to incineration facility.

61.5% of the dismantled pedestals are incinerated with energy recovery (heat and electricity) in module C3.

In module C4, the end-of-life scenario for pedestals is based on an European market model assuming 38% of sanitary landfill and 0.5% of open burning.

Module D

According to the guidelines of EN 15804+A2 and the PCR from EPD International, calculations are made for Module D. The loads and benefits result from the energy which comes from incineration of pedestals.

Cut-off rule

Consistent with the PCR, materials and processes with insignificant contributions of less than 1 % are excluded (dry ice only). For the use and end-of-life stage, scenarios are used, taking into account geographical conditions (such as electricity mix) and applications (waste treatment practices).

Data quality

Based on site specific information, this LCA study reflects the production for 2022. Components are supplied by external suppliers therefore manufacturing processes are modelled using Ecoinvent v3.9.1 models database with the best fitting representative geographical conditions and applications.

Electricity Grid

For production in Lièpvre, France, the corresponding electricity grid mix as stated on the invoice is used: Nuclear Power (82.7%) / Natural Gas (7.5%) / Wind (3.1%) / Hydro (2.0%) / Solar (1.9%) / Bioenergy (1%) / Coal (0.9%) / other fossils (0.4%) / Oil (0.4%) and geothermal (0.1%). The value for GWP-GHG is 0.095 kg CO_{2e}/kWh.

Modules declared. geographical scope.

Share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	ND	ND	ND	X	ND	ND	ND	X	X	X	X	X
Geography	RER	RER	FR	RER	FR-RER				FR-RER				FR-RER	RER	FR-RER	RER	FR - RER
Specific data used	>90% GWP-GHG			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products				-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites				-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acronyms	GLO = Global. RER = Europe. FR = France																

Data quality :

The refers to a unique product on site producer. The reference datasets used are current and apply to the start of continuous production of at least one year. The quality of the background data is considered very good.

According to GPI V4.0.0 annex A5.4, more detailed explanations are included on the share calculation of A1-A3 GWP-GHG specific data use.

“The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that do not capture all relevant aspects of data quality. The indicator is not comparable across product categories”.

Data Quality Environdec (GPI 4.0.0) - GWP-GHG A1-A3					
Process	Source Type	Source	Reference year	Data category	Share of primary data of GWP-GHG results for A1-A3
PP + 20% talc	Coillected Data Database	EPD Owner	2022	Primary data	67,40%
PP+30% glass fiber	Coillected Data Database	EPD Owner	2022	Primary data	14,30%
Energy used in manufacturing product	Coillected Data Database	EPD Owner	2022	Primary data	1,40%
Transport raw material	Coillected Data Database	EPD Owner	2022	Primary data	12%
Waste management	Coillected Data Database	EPD Owner	2022	Primary data	0%
					95,1%

Content information

Product components	Weight. kg	Weight-% (versus total weight)	Post-consumer material. weight-%	Biogenic material. weight-%
Plate	0.257	27.6%	51.5%	0%
Tray	0.128	13.8%	51.5%	0%
Nut	0.1095	11.8%	45.1%	0%
Boosters	0.330	35.5%	51.5%	0%
Stabilisers	0.105	11.3%	51.5%	0%
TOTAL	0.929	100%	50.8%	0%
Packaging materials	Weight. kg		Weight-% (versus the product)	Weight biogenic carbon. kg C/kg
Polyethylene	0.0034		3.65%	0
Wood	0.0025		0.30%	0.42
Cardboard box	0.0458		0.50%	0.23
TOTAL	0.0517		5.60%	

The products do not contain any REACH and RoHS SVHC substances in amounts greater than 0.1 % (1000 ppm).

Results of the environmental performance indicators

Mandatory impact category indicators according to EN 15804

Results per functional unit : “To insure maintain and elevation of one linear meter of fastening system for decking in accordance with GRAD[®] manufacturer's recommendations”

Results per functional or declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-fossil	kg CO ₂ eq.	1.18 E+00	3.97 E-02	1.78 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.73 E-01	1.29 E-02	1.36 E+00	4.71 E-02	- 1.67 E+00
GWP-biogenic	kg CO ₂ eq.	- 4.30 E-02	0.00 E+00	4.30 E-02	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00
GWP-luluc	kg CO ₂ eq.	4.53 E-03	2.01 E-05	8.19 E-05	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	8.16 E-05	6.37 E-06	1.03 E-05	3.49 E-06	- 2.39 E-03
GWP-total	kg CO ₂ eq.	1.14 E+00	3.97 E-02	2.21 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.73 E-01	1.29 E-02	1.36 E+00	4.71 E-02	- 1.67 E+00
ODP	kg CFC 11 eq.	2.87 E-08	6.24 E-10	4.36 E-09	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	4.35 E-09	2.81 E-10	1.40 E-09	9.91 E-11	- 5.13 E-08
AP	mol H ⁺ eq.	4.58 E-03	1.20 E-04	6.80 E-04	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	6.80 E-04	2.82 E-05	3.10 E-04	6.40 E-05	- 5.92 E-03
EP-freshwater	kg P eq.	1.76 E-04	3.06 E-06	2.41 E-05	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	2.41 E-05	9.17 E-07	4.06 E-06	6.28 E-07	- 9.00 E-04
EP-marine	kg N eq.	9.35 E-04	3.11 E-05	2.00 E-04	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	2.00 E-04	7.11 E-06	1.80 E-04	7.70 E-04	- 1.07 E-03
EP-terrestrial	mol N eq.	9.24 E-03	3.30 E-04	2.10 E-03	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	2.09 E-03	7.23 E-05	1.51 E-03	2.90 E-04	- 1.01 E-02
POCP	kg NMVOC eq.	4.65 E-03	1.50 E-04	8.30 E-04	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	8.30 E-04	4.38 E-05	3.80 E-04	1.10 E-04	- 3.89 E-03
ADP-minerals&metals*	kg Sb eq.	1.87 E-05	1.24 E-07	1.90 E-06	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.90 E-06	4.31 E-08	9.25 E-08	9.90 E-09	- 1.15 E-05
ADP-fossil*	MJ	3.52 E+01	5.60 E-01	2.36 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	2.36 E+00	1.85 E-01	2.56 E-01	9.32 E-02	- 3.28 E+01
WDP*	m ³	4.36 E-01	2.55 E-03	2.09 E-02	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	2.07 E-02	9.20 E-04	5.36 E-02	7.60 E-04	- 5.43 E-01
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption															

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

* Disclaimer: The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks

* Disclaimer: as module C are included in this EPD, user are discouraging using results of modules A1-A3 without considering results the results of module C1-C4.

Additional mandatory and voluntary impact category indicators

Results per functional unit : : “To insure maintain and elevation of one linear meter of fastening system for decking in accordance with GRAD[®] manufacturer's recommendations”

Results per functional or declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
GWP-GHG ¹	Kg CO ₂ eq.	1.19 E+00	3.97 E-02	1.78 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.73 E-01	1.29 E-02	1.36 E+00	4.71 E-02	- 1.68 E+00
Ecotoxicity potential (freshwater)	CTU e	6.73 E+00	3.03 E-01	1.46 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.44 E+00	9.06 E-02	2.68 E+00	3.32 E-01	- 4.02 E+00
Human toxicity (carcinogenic)	CTU h	5.57 E-10	1.73 E-11	1.75 E-10	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.74 E-10	5.90 E-12	1.18 E-10	1.68 E-10	- 5.68 E-10
Human toxicity (non-carcinogenic)	CTU h	1.63 E-08	4.03 E-10	2.43 E-09	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	2.41 E-09	1.31 E-10	4.18 E-09	5.57 E-10	- 1.95 E-08
Ionising radiation (human health)	kBq U235 eq	2.57 E-01	4.60 E-04	4.69 E-03	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	4.68 E-03	2.50 E-04	5.00 E-04	1.50 E-04	- 5.93 E-01
Land use and land use change	dimensions	6.89 E+00	3.16 E-01	8.87 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	8.82 E-01	1.11 E-01	6.92 E-02	2.05 E-01	- 4.29 E+00
Particulate matter formation	disease incidence	6.54 E-08	2.78 E-09	8.34 E-09	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	8.26 E-09	9.61 E-10	1.56 E-09	1.22 E-08	- 2.26 E-08

¹ This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero.

Resource use indicators

Results per functional unit : “To insure maintain and elevation of one linear meter of fastening system for decking in accordance with GRAD[®] manufacturer's recommendations”

Results per functional or declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
PERE	MJ	1.80 E+00	6.84 E-03	6.44 E-02	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	6.42 E-02	2.88 E-03	1.03 E-02	1.92 E-03	0.00 E+00
PERM	MJ	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00
PERT	MJ	1.80 E+00	6.84 E-03	6.44 E-02	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	6.42 E-02	2.88 E-03	1.03 E-02	1.92 E-03	0.00 E+00
PENRE	MJ	3.22 E+01	5.11 E-01	2.08 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	2.17 E+00	1.69 E-01	- 2.63 E+01	8.54 E-02	2.67 E+01
PENRM	MJ	6.16 E+01	4.82 E-02	1.89 E-01	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.88 E-01	1.60 E-02	1.26 E-02	7.79 E-03	0.00 E+00
PENRT	MJ	9.38 E+01	5.60 E-01	2.27 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	2.36 E+00	1.85 E-01	- 2.63 E+01	9.32 E-02	2.67 E+01
SM	kg	7.66 E-02	4.00 E-04	4.77 E-03	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	4.76 E-03	2.00 E-04	7.20 E-04	8.39 E-05	- 2.74 E-01
RSF	MJ	3.25 E-02	4.95 E-05	8.60 E-04	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	8.60 E-04	5.46 E-05	7.06 E-05	1.84 E-05	- 1.58 E-01
NRSF	MJ	7.35 E-02	2.20 E-04	1.75 E-03	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.75 E-03	1.10 E-04	2.50 E-04	4.98 E-05	- 1.61 E-01
FW	m ³	1.08 E-02	6.56 E-05	4.60 E-04	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	4.50 E-04	2.23 E-05	1.94 E-03	9.22 E-05	- 1.73 E-02
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water															

Waste indicators

Results per functional unit : “To insure maintain and elevation of one linear meter of fastening system for decking in accordance with GRAD[®] manufacturer's recommendations”

Results per functional or declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2.68 E-02	6.20 E-04	6.58 E-03	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	6.50 E-03	1.70 E-04	2.05 E-02	1.30 E-04	- 2.51 E-02
Non-hazardous waste disposed	kg	1.52 E-01	2.50 E-02	6.22 E-02	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	6.05 E-02	8.94 E-03	1.64 E-02	3.54 E-01	- 7.65 E-02
Radioactive waste disposed	kg	6.88 E-05	1.09 E-07	1.15 E-06	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.15 E-06	6.02 E-08	1.27 E-07	3.52 E-08	- 1.50 E-04

Output flow indicators

Results per functional unit : “To insure maintain and elevation of one linear meter of fastening system for decking in accordance with GRAD[®] manufacturer's recommendations”

Results per functional or declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0.00 E+00	0.00 E+00	2.50 E-03	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00
Material for recycling	kg	9.43 E-02	3.50 E-04	5.48 E-02	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	9.02 E-03	1.80 E-04	3.30 E-04	6.05 E-05	- 2.66 E-01
Materials for energy recovery	kg	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	5.71 E-01	0.00 E+00	0.00 E+00
Exported energy, electricity	MJ	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	8.92 E+00	0.00 E+00	0.00 E+00
Exported energy, thermal	MJ	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	0.00 E+00	1.27 E+01	0.00 E+00	0.00 E+00

Additional environmental information

Reference service life (per application)

Decking

RSL, years	20
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End-of-life (C1-C4)

Scenario (product)	Pedestals	Unit
Collected separately	0.929	kg
Collected with mixed (construction) waste	0	kg
For reuse	0	kg
For recycling	0	kg
For energy recovery	0.571	kg
For final disposal	0.358	kg

Module D

Scenario (contributing materials, incl. packaging)	Pedestals	Unit
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Materials for recycling	0	kg
Materials for export secondary fuels	0	kg
Materials for incineration	21.6	MJ
Material for landfilling	0.353	kg

ANNEX

With sustainability in mind, GRAD[®] has developed several solutions and resources and organises training courses to advise and support installers and users so that they can install and maintain their work in the best possible way. Installation and maintenance guides for decking and cladding are available. These include recommendations for cleaning and maintenance.

To minimise its environmental footprint, GRAD[®] strongly encourages its users to re-use off-cuts during installation. For example, rail cuttings can be reused for finishing and clips retained if they need to be replaced.

GRAD[®] is already applying these principles for the manufacture of accessory and finishing parts.

At the end of its life, the strength of the GRAD[®] system lies in its ease of dismantling. All components can be easily separated, making selective sorting easier. All used material can be channelled into existing recycling channels to enter a new manufacturing cycle.

GRAD[®]'s commitments are available via a CSR presentation and online at the following link:
<https://grad-system.com/engagements/>

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Additional social and economic information

GRAD[®]'s commitments are available via a CSR presentation and online at the following link:
<https://grad-system.com/engagements/>

Information related to Sector EPD

This EPD is not a sector EPD

Differences versus previous versions

This document is the first version of the EPD.

References

General Programme Instructions of the International EPD[®] System. Version 5.0.0

Product category rules (PCR) 2019:14 Construction products version 1.3.4, 2024, The EPD International, 2022

EN 15804:2012+A2:2029 Sustainability of construction works — Environmental product declarations - Core rules for the product category of construction products

ISO 14025:2006 - Environmental labels and declarations - Type III environmental declarations - Principles and procedures

ISO 14040 Environmental management - Life cycle assessment - Principles and framework

ISO 14044 Environmental management - Life cycle assessment - Requirements and guidelines

The EN15804 add-on for ecoinvent by GreenDelta - report version v1.4, Andreas Ciroth, 29 September 2022

