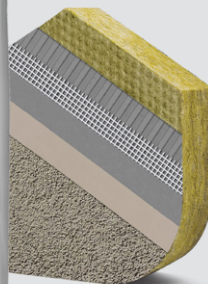


ENVIRONMENTAL PRODUCT DECLARATION

According to ISO 14025:2006 and EN 15804+A2:2019/AC:2021



Strong Bond White



Adhesive
mortar
(white)

DRUCKFARBEN
GROUP

Owner of the Declaration: DRUCKFARBEN HELLAS S.A.

Programme: [The International EPD® System](http://www.environdec.com) / www.environdec.com

Programme operator: EPD International AB

Registration number	EPD-IES-0024070
Date of publication (issue)	2025-06-17
Date of validity	2030-06-16
Geographical scope	Europe



Powered by:



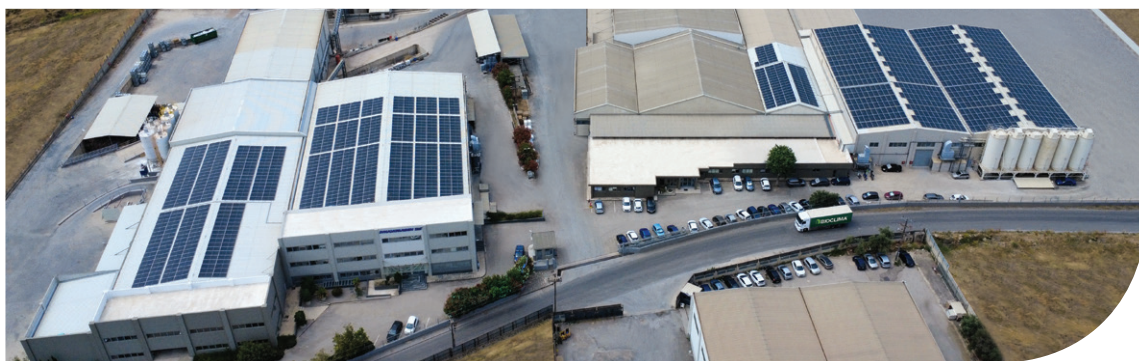

INTERNATIONAL EPD SYSTEM

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.

Company Description

Druckfarben Group S.A.

- Produces inks for flexography and rotogravure printing.
- In the coatings division, decorative and architectural products are commercialized under the KRAFT Paints brand.
- Energy saving / external thermal insulation products are commercialized under the BIOCLIMA brand.



DRUCKFARBEN Group comprises of a group of companies with worldwide activities catering to the ink, coating, and energy saving sectors.

More specifically, **DF Hellas S.A.** produces inks for flexography and rotogravure printing under the **DRUCKFARBEN** brand name using sub-brands for the various applications in the food packaging, plastic bags, cartons, and related products.

In the coatings division it commercializes its decorative and architectural paints products under the **KRAFT PAINTS** brand and in the energy saving/external thermal insulation products under the **BIOCLIMA®** brand. The Group has an important and increasing international presence in Eastern and Central Europe through subsidiaries in Bulgaria, Romania, Serbia, and through representatives

in Malta, Turkey, Tunisia, Lebanon, Hungary, Slovenia, Croatia, Albania and Western and North Africa, Israel, and the Gulf countries. In West Africa, the company operates in Nigeria through its own subsidiary and the neighboring countries of the Economic Community of West African States (ECOWAS). The company's strategy includes expanding its export activities to new countries supported by a strong network of local partners.

DRUCKFARBEN holds a significant position in the area of architectural paints, varnishes and mortars related to construction activities under the **KRAFT PAINTS** brand. Also, under the **BIOCLIMA®** brand, the company offers a wide range of certified thermal insulation systems for energy upgrading and aesthetic renovation of new and existing buildings.

Programme information

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

Owner of the declaration: DRUCKFARBEN HELLAS S.A.
Megaridos Ave., Kallistiri Area, 19300, Aspropyrgos, Greece

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 Construction products, version 1.3.3

c-PCR 2019:14-c-PCR-017 Technical-chemical products (for construction sector)
(c-PCR to PCR 2019:14) (adopted from EPD Norway 2022-07-08)

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 info@environdec.com

Life cycle assessment (LCA)

Werner Environment & Development, St. Gallen

Third-party verification

Independent third-party verification of the declaration and data,
according to ISO 14025:2006, via:

☒ EPD verification by accredited certification body

Third-party verifier:

Business Quality Verification PC



Approved certification body accountable for the third-party verification.

The certification body is accredited by:

Hellenic Accreditation System with accreditation number 1218.

Procedure for follow-up of data during EPD validity involves third-party verifier.

☒ Yes

☐ No

Liability

The EPD owner has the sole ownership, liability, and responsibility of the EPD

Comparability

EPDs within the same product category but registered in different EPD programmes may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same version number up to the first two digits²⁰) 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.

Additional information:

Additional information can be obtained under: <https://kraftpaints.com> & <https://bioclima.gr>

Contact person

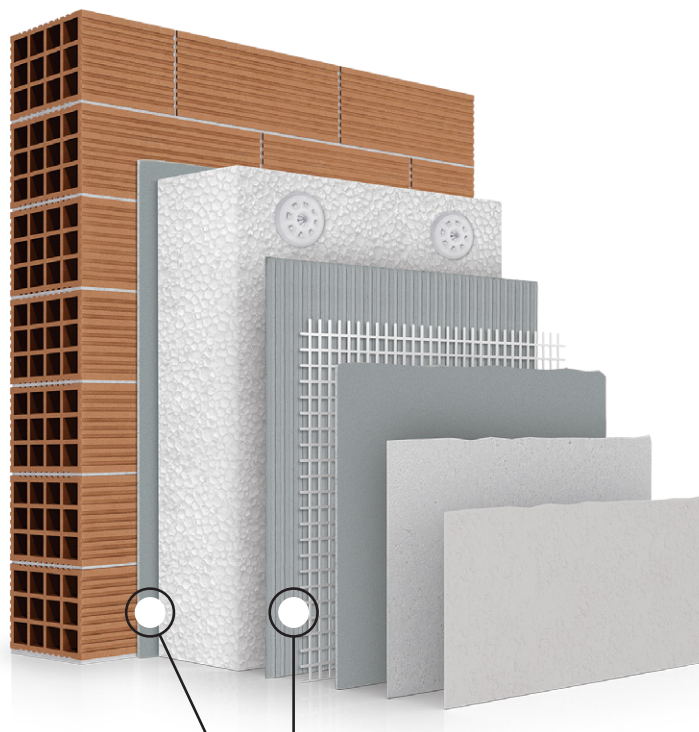
Loukas Angelis / R&D Manager
laggelis@druckfarbengroup.com

Specification of the product

The declared product Strong Bond (white) is used as an adhesive mortar in external thermal insulation composition systems (ETICS) produced by DRUCKFARBEN HELLAS S.A that are marketed under the brand name BIOCLIMA®.

Declared product (commercial references): Strong Bond (grey)

Production sites/producers for which the EPD is representative:
DRUCKFARBEN HELLAS S.A., Aspropyrgos, Greece



Adhesive mortar:
Strong Bond White

Strong Bond White

Strong Bond White is a fiber-reinforced, one-component cementitious resin mortar. Contains cement, quartz aggregates, limestone fillers and improving additives. It offers excellent adhesion, high mechanical strength and elasticity.

It is classified as a GP CS-IV W2 rendering mortar according to EN 998-1 and as part of certified external thermal insulation system CLIMAWALL® by BIOCLIMA® according to EAD 04 0083-00-04-04, as adhesive and base coat mortar.



TECHNICAL DATA

Maximum grain size of mortar	600µm
Bulk density of dry mortar	1,55±0,05kg/lt
Bulk density of fresh mortar	2,00±0,05kg/lt
EN 998-1 General purpose rendering mortar for use on external walls, ceilings & columns	
Adhesion	0.6 (FP B)
Water absorption	W _c 2
Water Vapour Permeability	15/35
Thermal conductivity	0.82 W/m·K (Tab. Value, P=50%)
Reaction to Fire	Euroclass A1

Content declaration

Product component	Weight, kg	Post-consumer recycled material, weight-% of product	Biogenic material, weight-% of product	Biogenic material, kg C/declared unit
Binder	0.311	0	0	0
Filler	0.647	0	0	0
Additives	0.042	0	0	0
Sum	1.00	0	0	0

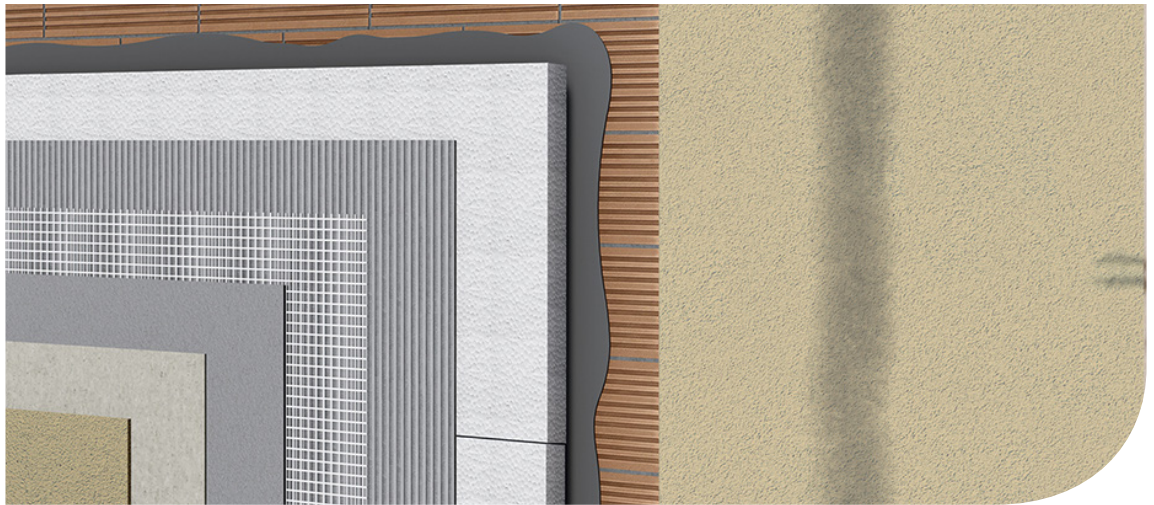
Packaging materials	Weight, kg	Weight-% (versus the product)	Biogenic material, kg C/declared unit
Polyethylene	0.0008	0.080%	0
Wood	0.00188	0.188%	0.000879
Cardboard	0.00660	0.7%	0.00249
Sum	0.00928	0.928%	0.00337

Content of substances of very high concern

The product does not contain any substances on the candidate list for substances of very high concern (SVHC) according to REACH (Annex XIV) (list accessed 23.5.2025).

Application of the product

BIOCLIMA external thermal insulation system has been entrusted in recent years by constructors, builders, architects and designers in various buildings such as school complexes and hotel units.



Application

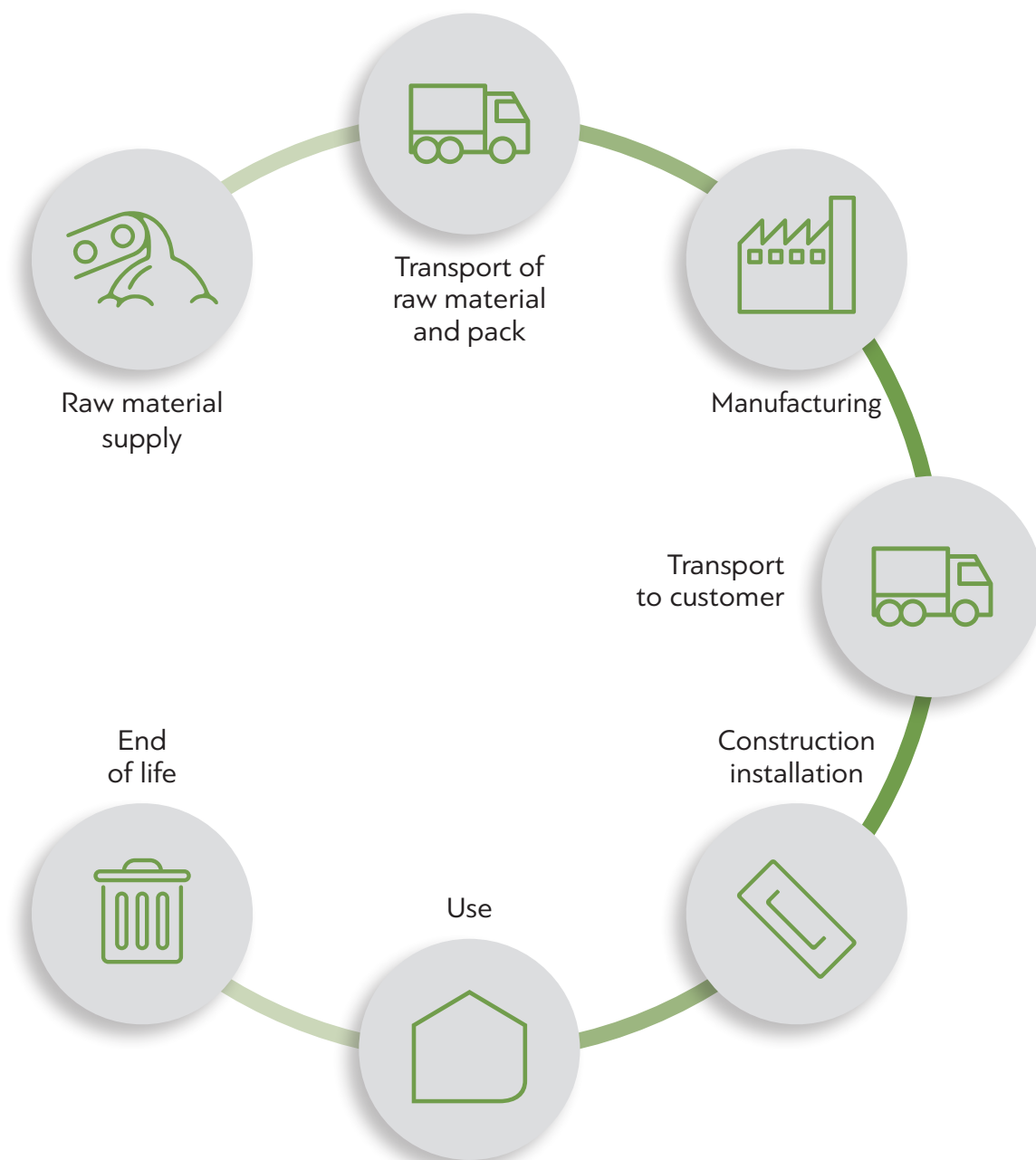
Strong Bond White is used as an adhesive for thermal insulation boards, such as expanded polystyrene (EPS), extruded polystyrene (XPS), rock wool (MW) etc. of the Exterior Thermal Insulation System CLIMAWALL® by BIOCLIMA®. In addition, it is used as a base coat, for thermal insulation boards, reinforced with alkali resistant glass fiber mesh, thus being the ideal substrate for the final plaster that will follow.

It also can be used, in combination with alkali resistant glass fiber mesh and ClimaTop® decorative finishing render, as an anti-crack protection layer, in order to cover connections of different types of masonry (e.g. aerated concrete with concrete, bricks with concrete or aerated concrete, etc.), to cover wall drilling channels made by electricians or plumbers, to reinforce edges of openings (doors and windows) in order to prevent future cracks, to smooth surfaces, to protect entire parts of a building structure against possible cracks, etc.

Suitable for outdoor & indoor usage.

For further information (e.g. conditions for the implementation, preparations before starting the work, substrate checks & preparations, analytical technical methods of application, material consumptions etc.) please refer to the analytical ClimaWall® Technical Guide by BIOCLIMA® at www.bioclima.gr or www.kraftpaints.com

LCA: Calculation rules



Declared unit:

The declared unit covers 1 kg of Strong Bond White applied as used in external thermal insulation composition systems (ETICS).

Reference service life:

In line with c-PCR 2019:14-c-PCR-017, Technical-chemical products (for construction sector), no reference service life is declared.

Type of EPD:

Cradle to gate with options, modules C1-C4, and module D (A1-A3, C, D, and additional modules A4 and A5).

Data Collection period: Year 2021.

Background database and LCA software:

The LCA was calculated in the latest version of the LCA software SimaPro (version 10.2.0.0) using ecoinvent v3.11 (system model: “cut-off by classification”).

Energy sources of the electricity used in manufacturing processes of module A3:

Greek residual mix, medium voltage (ecoinvent v3.11): 0.824 kg CO₂eq/kWh

Production of infrastructure and capital goods are excluded from the study

Characterization factors (JRC): Based on Reference package EF 3.1

UN CPC CODE: 375 Articles of concrete, cement and plaster.

Scenarios and additional technical information

The following technical information is a basis for the declared modules or can be used for developing specific scenarios in the context of a building assessment.

Transport to the construction site (A4): Module A4 contains the average transport scenario from the production site to the construction site. An average transport distance of 300 km as a default distance according to c-PCR 2019:14-c-PCR-017 is assumed.

Parameter	Parameter unit expressed per functional/declared unit
Fuel type and consumption of vehicle or vehicle type used for transport e.g. long distance truck, boat etc.	Used dataset: Transport, freight, lorry >32 metric ton, EURO5 {RER} transport, freight, lorry >32 metric ton, EURO5 Cut-off, U
Distance	300 km
Capacity utilisation (including empty returns)	as in ecoinvent v3.11 database
Bulk density of transported products	not applicable (transport weight of product and packaging: 1 kg of product in 0.093 kg of packaging),
Volume capacity utilisation factor (factor: =1 or <1 or ≥ 1 for compressed or nested packaged products)	Not applicable

Installation in the building (A5)

Manual application is assumed, eventual further inputs (e.g., electricity consumption for the mixing), crane transport, etc.) are considered to be negligible.

An average installation loss of 4 % is taken into account.

During installation, some VOC are emitted; emission levels are based on data reported in the technical datasheet (density per litre, VOC emissions/l).

The packaging material and the installation waste is assumed to be transported to a landfill over 50 km by a lorry 16-32 metric ton, EURO.

For the multi-way pallets, a reuse rate of 20 times is taken into account also in the disposal scenario.

Parameter	Parameter unit expressed per functional/declared unit
Ancillary materials for installation (specified by material);	not applicable
Water use	0 m ³
Other resource use	0 kg
Quantitative description of energy type (regional mix) and consumption during the installation process	0 kWh (manual installation)
Wastage of materials on the building site before waste processing, generated by the product's installation (specified by type)	0.05 kg wastage of product
Output materials (specified by type) as result of waste processing at the building site e.g. of collection for recycling, for energy recovery, disposal (specified by route)	0.0008 kg of PE foil (packaging) going to landfill 0.00188 kg of wood (packaging) going to landfill 0.0066 kg of cardboard (packaging) going to landfill 0.05 kg of wastage (product) going to landfill
Direct emissions to ambient air, soil and water	not relevant

End-of-life (C1 - C4)

Mechanical, non-selective dismantling is considered. The relate environmental impacts related to the use of building machines is attributed to the de-construction of the supportive structure, as no specific information is available for the fuel consumption for the de-construction of the ETICS itself. Thus, no environmental impacts are declared in module C1.

A landfilling scenario is assumed for Greece in line with the Product Environmental Footprint Category Rules (PEFCR) for insulation production (PEFCR 2019). A default distance of 50 km is assumed between the de-construction site and the landfill.

The whole ETICS is assumed to be landfilled in a dedicated landfill.

Processes	Parameter unit expressed per functional / declared unit of components, products or materials (specified by type of material)
Collection process specified by type	0 kg collected separately
	1.25 kg collected with mixed construction waste
Recovery system specified by type	0 kg for re-use
	0 kg for recycling
	0 kg for energy recovery
Disposal specified by type	1.25 kg of product (construction waste) going to landfill
Assumptions for scenario development, (e.g. transportation)	see above.

Reuse, recovery and recycling potential (D)

Not relevant for the declared product

Results

DESCRIPTION OF THE SYSTEM BOUNDARY

(X = INCLUDED IN LCA; ND = MODULE OR INDICATOR NOT DECLARED)

	PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
	Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	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	ND	ND	ND	ND	X	X	X	X	X
Geography	Global	Global	GR	GR	GR	-	-	-	-	-	-	-	-	-	-	-	-
Specific data used	2%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation products	Not applicable			Not applicable		-	-	-	-	-	-	-	-	-	-	-	-
Variation sites	Not applicable			Not applicable		-	-	-	-	-	-	-	-	-	-	-	-

RESULTS OF THE LCA - ENVIRONMENTAL IMPACTS according to EN 15804+A2: 1kg of Strong Bond (white)

Core Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP total	kg CO ₂ eq	3,64E-01	3,20E-02	3,73E-02	0	1,19E-02	0	1,40E-02	0
GWP fossil	kg CO ₂ eq	3,76E-01	3,19E-02	3,23E-02	0	1,19E-02	0	6,91E-03	0
GWP biogenic	kg CO ₂ eq	-1,16E-02	7,32E-06	5,02E-03	0	2,50E-06	0	7,14E-03	0
GWP luluc	kg CO ₂ eq	1,63E-04	1,15E-05	1,24E-05	0	3,94E-06	0	1,29E-06	0
GWP-GHG	kg CO ₂ eq	3,76E-01	3,20E-02	3,24E-02	0	1,19E-02	0	6,91E-03	0
ODP	kg CFC11 eq	3,44E-09	6,99E-10	5,40E-10	0	2,59E-10	0	2,46E-10	0
AP	mol H ⁺ eq	1,38E-03	1,06E-04	1,19E-04	0	3,82E-05	0	4,61E-05	0
EP freshwater	kg P eq	7,94E-06	2,42E-07	4,48E-07	0	8,71E-08	0	3,93E-08	0
EP-marine	kg N eq	2,71E-04	3,55E-05	3,33E-05	0	1,27E-05	0	1,96E-05	0
EP terrestrial	mol N eq	3,31E-03	3,91E-04	3,79E-04	0	1,40E-04	0	2,15E-04	0
POCP	kg NMVOC eq	9,32E-04	1,67E-04	1,39E-04	0	5,79E-05	0	8,06E-05	0
ADPE	kg Sb eq	1,67E-06	8,97E-08	1,14E-07	0	4,01E-08	0	8,59E-09	0
ADPF	MJ	2,40E+00	4,67E-01	3,69E-01	0	1,69E-01	0	1,82E-01	0
WDP	m ³ depriv.	6,51E-01	2,15E-03	2,58E-02	0	3,14E-04	0	4,26E-04	0
Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non- fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential								

Disclaimer 1 for the indicator IR: 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.

Disclaimer 2 for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP: The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

The use of the results of modules A1-A3 is discouraged without considering the results of module C. 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.

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1kg of Strong Bond (white)

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	MJ (Hu)	4,00E-01	7,11E-03	2,07E-02	0	2,71E-03	0	3,60E-03	0
PERM	MJ (Hu)	0,029892	0	0,00119568	0	0	0	0	0
PERT	MJ (Hu)	4,30E-01	7,11E-03	2,19E-02	0	2,71E-03	0	3,60E-03	0
PENRE	MJ (Hu)	2,36E+00	4,67E-01	3,68E-01	0	1,69E-01	0	1,82E-01	0
PENRM	MJ (Hu)	0,03408	0	0,0013632	0	0	0	0	0
PENRT	MJ (Hu)	2,40E+00	4,67E-01	3,69E-01	0	1,69E-01	0	1,82E-01	0
SM	kg	0,00E+00	0	0,00E+00	0	0	0	0	0
RSF	MJ (Hu)	0	0	0	0	0	0	0	0
NRSF	MJ (Hu)	0	0	0	0	0	0	0	0
FW	m ³	5,84E-07	8,69E-08	6,96E-08	0	3,35E-08	0	1,55E-08	0
Caption	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 resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water								

RESULTS OF THE LCA - WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1kg of Strong Bond (white)

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	kg	1,77E-05	3,11E-06	2,50E-06	0	1,15E-06	0	1,11E-06	0
NHWD	kg	5,36E-02	4,03E-02	3,88E-01	0	8,08E-03	0	1,25E+00	0
RWD	kg	6,64E-06	2,22E-07	4,05E-07	0	8,64E-08	0	7,00E-08	0
CRU	kg	0	0	0	0	0	0	0	0
MFR	kg	0	0	0	0	0	0	0	0
MER	kg	0	0	0	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0	0	0
Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy								

RESULTS OF THE LCA - additional impact categories according to EN 15804+A2-optional: 1kg of Strong Bond (white)

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	Desease incidences	1,06E-08	3,22E-09	2,22E-09	0	9,46E-10	0	1,16E-09	0
IR	kBq U-235 eq	5,04E-03	1,93E-04	3,22E-04	0	7,28E-05	0	6,81E-05	0
ETP-fw	CTUe	1,14E+00	5,48E-02	7,55E-02	0	2,23E-02	0	9,64E-03	0
HTP-c	CTUh	1,14E-10	5,22E-12	7,39E-12	0	2,02E-12	0	8,81E-13	0
HTP-nc	CTUh	3,02E-09	3,01E-10	2,73E-10	0	1,05E-10	0	2,49E-11	0
SQP	-	2,26E+00	4,70E-01	4,00E-01	0	9,97E-02	0	3,70E-01	0
Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index								

Relative contributions to the life cycle impacts

Figure 1 illustrates the relative contributions of the different modules along the life cycle of the declared product.

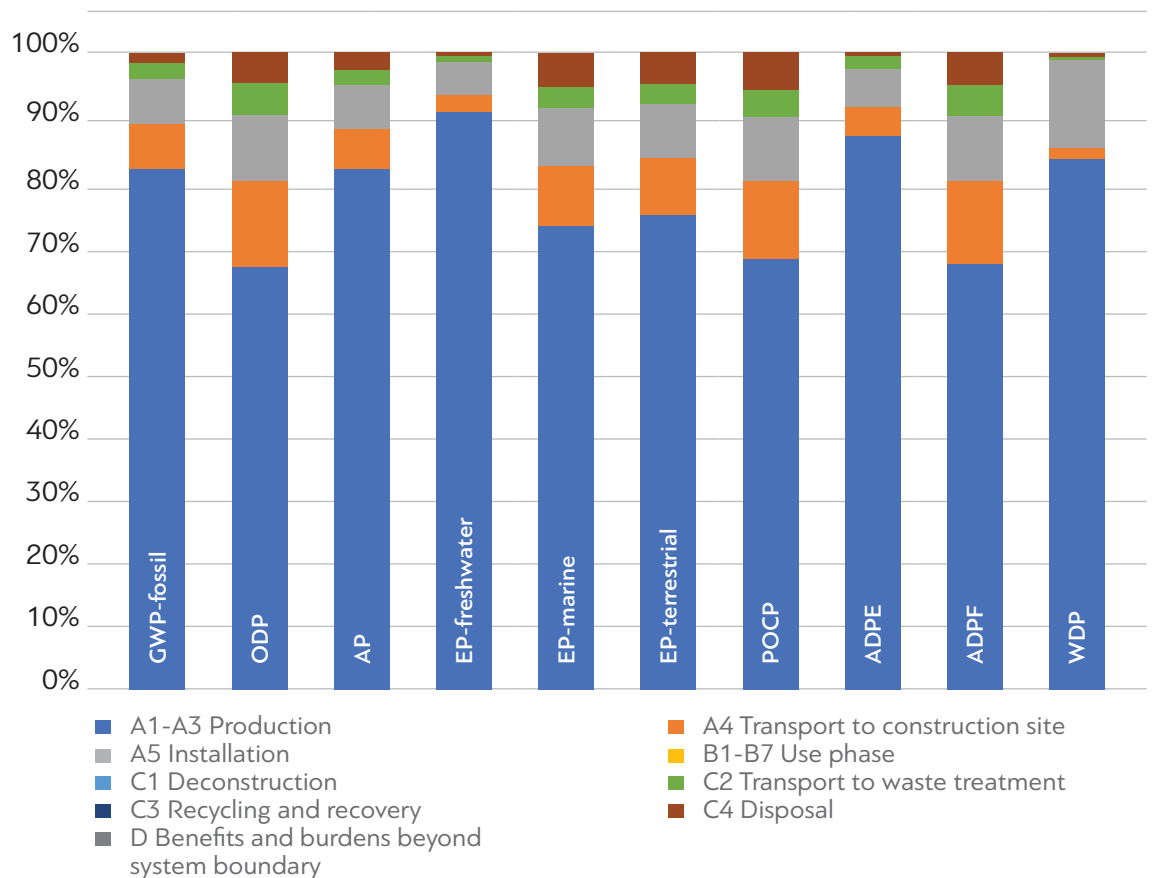


Figure 1: Environmental impacts of Strong Bond White (impacts A1-C4 = 100 %).

The largest part of environmental impacts is caused during production (modules A1-A3). It is only for the photochemical oxidation potential, where the VOC emissions during curing contribute significantly to module A5.

Benefits and burdens beyond the system boundary (module D) are not relevant for the considered product, as landfilling is assumed as the default scenario for the product and its packaging.

Disclaimer 1: for the indicator IR

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.

Disclaimer 2: for the indicators ADPE, ADPF, WDP, ETP-fw, HTP-c, HTP-nc, SQP

The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

References

EN 15804+A2:2019/AC:2021: 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 15686-(several parts): Buildings and constructed assets - Service life planning.

ISO 14020:2000: Environmental labels and declarations - General principles.

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

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

Waste Framework Directive: COUNCIL REGULATION (EU) No 333/2011 of 31 March 2011 establishing criteria determining when certain types of scrap metal cease to be waste under Directive 2008/98/EC of the European Parliament and of the Council.

ECHA: The Candidate List of substances of very high concern, available via <https://echa.europa.eu/nl/-/four-newsubstances-added-to-the-candidate-list>.

EPD International: PCR 2019:14 Construction products version 1.3.4 (EN 15804:A2), www.environdec.com

EPD International: General Program Instructions for the International EPD System, version 4.01. www.environdec.com

Weidema et al. (2013): Weidema, B., C. Bauer, R. Hischier, C. Mutel, T. Nemecek, J. Reinhard, C.O. Vadenbo, G. Wernet (2013): Overview and methodology, Data quality guideline for the ecoinvent database version 3. ecoinvent report no. 1 (v3), St. Gallen, Schweiz.



Strong Bond White

ENVIRONMENTAL PRODUCT DECLARATION

According to ISO 14025 and EN 15804+A2

Owner of the Declaration	DRUCKFARBEN HELLAS S.A.
Programme operator	EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden. Website: www.environdec.com
Publisher	EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden. Website: www.environdec.com
Registration number	EPD-IES-0024070
Issue date	2025-06-17
Valid to	2030-06-16

Third-party verifier:



Business Quality Verification P.C.



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www.druckfarbengroup.com