

Laminex® Melamine Panels on Particleboard

MELTECA® Whiteboard

Environmental Product Declaration

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for: Melteca® and Whiteboard on Superfine® Standard and MR by Laminex® New Zealand

Programme:	The International EPD® System www.environdec.com
Programme operator:	EPD Australasia Ltd. www.epd-australasia.com
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Version:	1.1
Version date:	2024-03-07
Owner's Name:	Laminex® New Zealand
Product name:	Melteca® and Whiteboard
Valid from:	2024-01-25
Valid until:	2029-01-25
Geographical scope:	New Zealand

The products covered in the EPD are listed on page 6.

This EPD is of multiple products, based on worst-case results.

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 <https://epd-australasia.com/>





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Laminex® New Zealand is a supplier of high-quality countertops, vertical panel products and timber based building products, contributing to the creation of inspiring spaces in New Zealand.

Laminex® manufactures Melteca® decorated board and particleboard in Hamilton and Taupo respectively, with the rest of the portfolio range featuring locally made and globally sourced products for benchtops, cabinetry, wall linings, structural flooring and wood-based building products; it includes popular and innovative brands such as Laminex® & Formica® Laminate, Seratone®, Caesarstone®, Surround by Laminex®, HIMACS, Strandfloor®, and Laminam®.

With a commitment to being the easiest to do business with, Laminex® New Zealand ensures it has high quality range of products that reflect leading-edge innovation, international trends and insights, supported by expert technical knowledge and excellent service.

The Laminex® operational site at Taupo is conducted under a quality management system, accredited to ISO 9001 standards. Both Hamilton and Taupo also operate under certified environmental management systems, accredited to ISO14001 standards.

As a large manufacturer of wood products, we respect and support responsible forest management and are committed to producing quality products that are backed by the very best certifications.

Laminex® New Zealand (FSC-C102329) has achieved Forest Stewardship Council (FSC®) and Programme for the Endorsement of Forest Certification (PEFC), Chain of Custody certification for all our local manufacturing plants, along with the entire supply chain. This means that all certified wood products from these plants are produced using responsibly sourced wood fibres.



Top cabinetry Melteca® Porcelain Blush
Under bench cabinetry and shelves Melteca® Raw Birchply

Cabinetry Melteca® Sublime Teak

Laminex® National Footprint



Products Covered by EPD

This EPD is for "particleboard" based products and covers Laminex® low pressure melamine panels pressed onto a Superfine® standard or MR substrate to create Melteca® and Whiteboard products. The Laminex® low pressure laminate is treated at the Hamilton manufacturing site, before it is pressed onto the substrate to make the

finished products. Melteca® and Whiteboard panels are typically used in the construction of furniture, cabinets and general-purpose interior building.

The overall panel size is 1220mm by 2440 mm and the panels come in various thicknesses (as noted in table). Density of the board is 660 kg/m³ and the moisture content is 7%.

Table 1: Products covered by this EPD

Product	Registration number	Grouping	Area density (kg/m ²)
Melteca on Particleboard 9 mm	S-P-09356-01	PBS09	6.95
Melteca on Particleboard 12 mm	S-P-09356-02	PBS12	8.93
Melteca on Particleboard 16 mm	S-P-09356-03	PBS16	11.57
Melteca on Particleboard 18 mm	S-P-09356-04	PBS18	12.89
Melteca on Particleboard 25 mm	S-P-09356-05	PBS25	17.51
Melteca on Particleboard 30 mm	S-P-09356-06	PBS30	20.81
Whiteboard on Particleboard 9 mm	S-P-09356-07	PBS09	6.95
Whiteboard on Particleboard 12 mm	S-P-09356-08	PBS12	8.93
Whiteboard on Particleboard 16 mm	S-P-09356-09	PBS16	11.57
Whiteboard on Particleboard 18 mm	S-P-09356-10	PBS18	12.89
Whiteboard on Particleboard 25 mm	S-P-09356-11	PBS25	17.51
Whiteboard on Particleboard 30 mm	S-P-09356-12	PBS30	20.81
Melteca on Particleboard Moisture Resistant 9 mm	S-P-09356-13	PBMR09	6.95
Melteca on Particleboard Moisture Resistant 12 mm	S-P-09356-14	PBMR12	8.93
Melteca on Particleboard Moisture Resistant 16 mm	S-P-09356-15	PBMR16	11.57
Melteca on Particleboard Moisture Resistant 18 mm	S-P-09356-16	PBMR18	12.89
Melteca on Particleboard Moisture Resistant 25 mm	S-P-09356-17	PBMR25	17.51
Melteca on Particleboard Moisture Resistant 30 mm	S-P-09356-18	PBMR30	20.81
Whiteboard on Particleboard Moisture Resistant 9 mm	S-P-09356-19	PBMR09	6.95
Whiteboard on Particleboard Moisture Resistant 12 mm	S-P-09356-20	PBMR12	8.93
Whiteboard on Particleboard Moisture Resistant 16 mm	S-P-09356-21	PBMR16	11.57
Whiteboard on Particleboard Moisture Resistant 18 mm	S-P-09356-22	PBMR18	12.89
Whiteboard on Particleboard Moisture Resistant 25 mm	S-P-09356-23	PBMR25	17.51
Whiteboard on Particleboard Moisture Resistant 30 mm	S-P-09356-24	PBMR30	20.81

Manufacturing Process

Laminex® Hamilton is the manufacturer for Melteca® and Whiteboard. Hamilton Manufacturing operates two operational plants:

VITS Treater and

Siemplekamp Press

The raw paper rolls are brought in from overseas, in over 80 different colours.

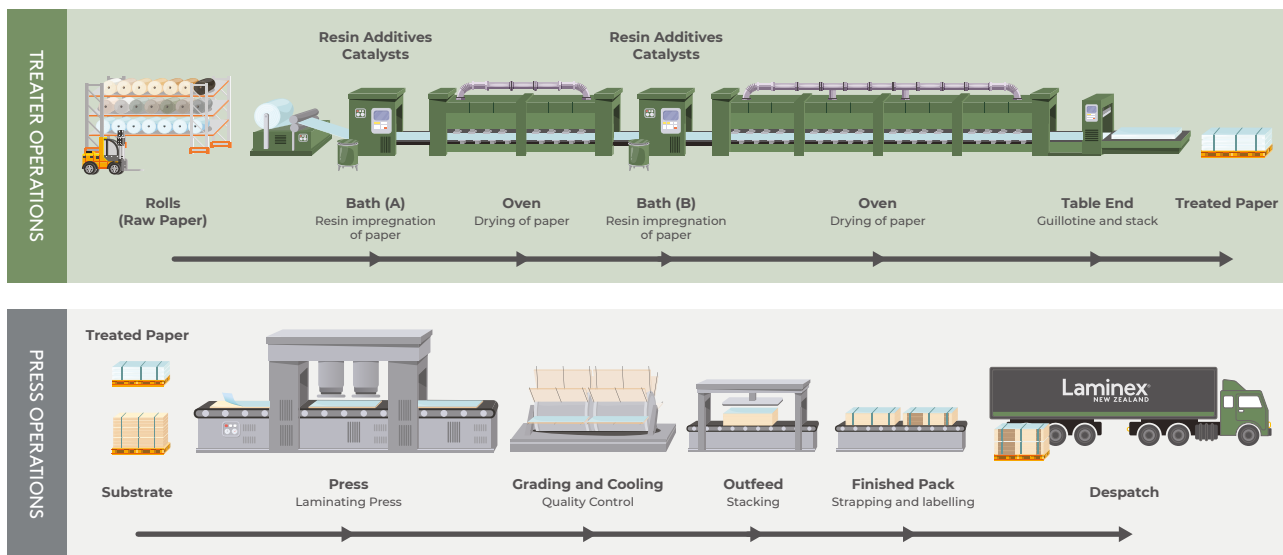
The paper is first 'treated' in the VITS treater. The treating process involves saturating the paper in specially formulated resin. Once coated the paper is put through

the hot air oven for drying. Treated paper is then cut to length and sent to the Siemplekamp for pressing.

Two main substrates used for Melteca® production are MDF and Superfine® Particleboard. The substrates come in five sizes and seven thicknesses.

In the Siemplekamp Press, a substrate is placed between two sheets of treated paper and 'pressed'. The pressing involves applying heat and pressure to the substrate and the treated paper. The heat causes the resin in the treated paper to 'flow' and bonds the paper to the substrate. The result is a laminated board of Melteca® or Whiteboard.

Figure 1: Melteca® and Whiteboard Manufacturing Process



Content Declaration

Table 2: Composition of wood panel products per 1 m2 product

Product components	Weight, kg/m ²	Amount in product (%)	Post-consumer recycled material, weight %	Biogenic material, weight %	Biogenic material kg of C/m ²
Wood board (Particleboard)	5.94-19.80	85.5-95.2	0	70.6-78.6	2.56-8.04
Treated Paper	0.28	1.3-4.0	0	99.5	0.13
Hardener	1.83E-03	0.03-0.1	0	0	0
Catalyst	0.01	0.01-0.03	0	0	0
Resin	0.72	3.5-10.4	0	0	0
Total	6.95-20.81				2.69-8.17

Table 3: Composition of packaging (per 1 m2 product)

Packaging materials	Amount Weight, kg	Amount (% versus the product)	Biogenic material, weight % (versus the product)	Biogenic material kg of C/m ²
Coversheet (additional MDF board)	0.16	0.7-2.12	0.55-1.63	0.11-0.13
Softwood gluts	1.35E-02	0.06-0.18	0.06-0.18	6.75E-03
Plastic strapping	9.01E-04	0-0.01	0	0
Labels	2.08E-04	0	0	0
Inks	2.14E-07	0	0	0
Total	0.18			0.12-0.13

Table 4: Industry classification

Product	Classification	Code	Category
Melteca® Standard and MR	UN CPC Ver.2	31431	Particleboard
Whiteboard Standard and MR	ANZSIC 2006	1494	Reconstituted Wood Product Manufacturing

Declared Unit

EPDs that do not cover the full product life cycle from raw material extraction through to end-of-life use the term “declared unit”, rather than functional unit. “Declared unit” will be used in the EPDs themselves and is defined as: 1m² of melamine panels at the factory gate, according to the product category rules ‘PCR 2019.14 Construction Products Version 1.3.1’.

Packaging

Once a given product is created, it is packed using:

1. Wooden coversheet (spare product manufactured at plant)
2. Wooden bearers, (manufactured at the Laminex® Taupo plant)
3. PET strapping
4. Cardboard banner, depicting brand, product and key Health, Safety and Environmental information

PET strapping and cardboard are recyclable materials but have conservatively been modelled as being sent to landfill.

Coversheets and bearers can be collected and reused by Laminex. The study has conservatively assumed that no coversheets and bearers have been reused.

Dangerous Substances

None of the products in this EPD contain any materials included on the Candidate List of substances of very high concern under the European REACH Regulation (EC 1907/2006) at a concentration greater than 0.1% weight/weight.

As shown in the table below, this EPD is for cradle to gate with modules C1-C4 and module D (A1-A3 + C + D). Other life cycle stages (Modules A4-A5, B1-B7) are dependent on particular scenarios and best modelled at the project level.

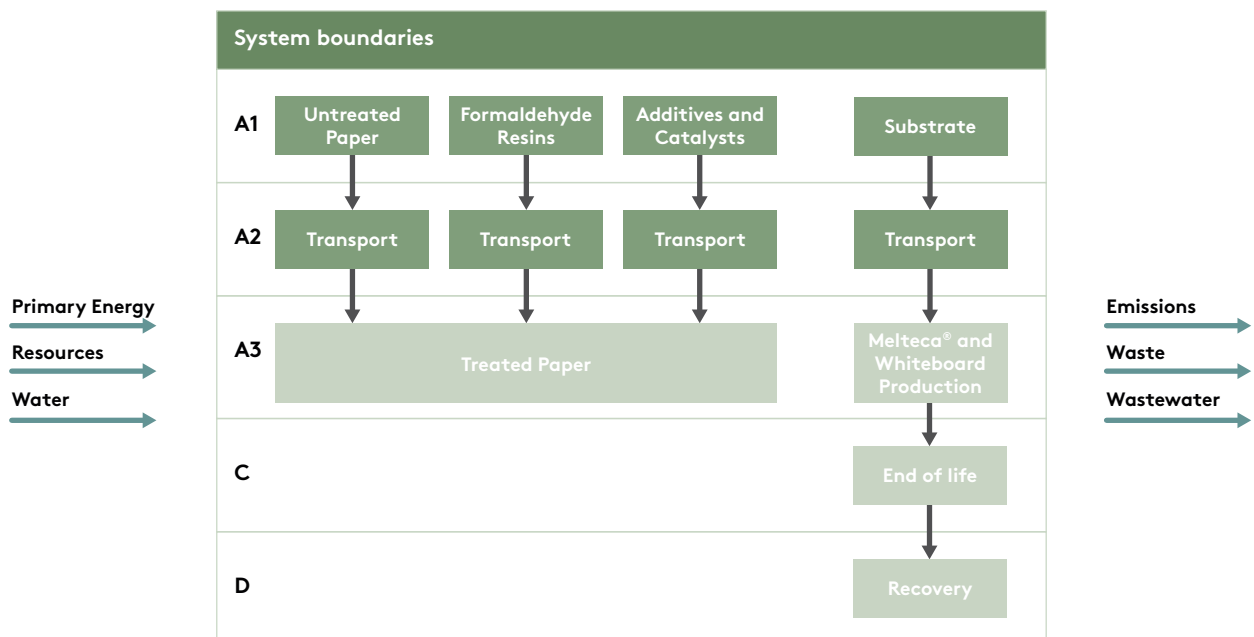
Table 5: Modules included in the scope of the EPD

	Product stage			Construction process stage		Use stage							End of life stage				Resource Recovery
	Raw material supply	Transport	Manufacturing	Transport	Construction/Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/Demolition	Transport	Waste processing	Disposal	Future reuse, recycling or energy recovery potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules Declared	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	NZ	NZ	NZ										NZ	NZ	NZ	NZ	NZ
Specific Data	62-82%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation: Products	<26%*			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation: Sites	Not relevant			-	-	-	-	-	-	-	-	-	-	-	-	-	-

(X = declared module; ND = module not declared)

*Worst-case results are presented for each product group, the variation in GWP-GHG results shows how much lower the results may be, within each group.

Figure 2: Superfine® System Boundaries



Production (Module A1-A3)

The production stage includes the environmental impacts associated with raw materials extraction and processing of inputs, transport to, between and within the manufacturing site, manufacturing of average product at the exit gate of the manufacturing site and transport of product to customer.

Module A1 (raw material supply)

Includes the production of paper, production of substrate, production of resins and additives.

Module A2 (transportation)

Includes the transportation of wood panel within New Zealand via truck to the manufacturing site in Hamilton. Transport for paper laminate and other resins used in the manufacture of the product that is a combination of truck and sea freight.

Module A3 (manufacturing)

Includes the production of ancillary materials, on-site transport by forklift, recycling and landfill of manufacturing waste.

Since Module C is included in the EPD, the use of Module A1-A3 results without considering the results of Module C is discouraged.

End of Life stage (Module C)

When a building reaches its end-of-life, Melteca® and Whiteboard products are disposed of.

The end-of-life stage (Modules C1-C4) are modelled on the assumption that currently landfill is the main end-of-life option for discarded Melteca® and Whiteboard. This means that module C3 is equal to zero as no waste processing is required.

Module C1 (deconstruction/demolition)

Includes dismantling the Melteca® and/or Whiteboard after use. Dismantling includes use of a diesel fuelled excavator.

Module C2 (transport to end-of-life)

Includes transport of waste Melteca® and/or Whiteboard to landfill after demolition of the building where it was used.

Module C4 (disposal)

Includes Melteca® and/or Whiteboard end-of-life in landfill.

Recovery and Recycling potential (Module D)

The resource recovery stage (Module D) is modelled based on the assumption that currently landfill is the main end-of-life option for discarded. Materials that are sent to landfills at end-of-life are linked to an inventory that accounts for waste composition, regional leakage rates, landfill gas capture, and utilisation rates (flaring vs. power production). A credit is assigned for power output using the NZ grid mix. This results in a credit for Module D.

Life cycle inventory (LCI) data and assumption

Primary data was used for all manufacturing operations up to the factory gate, including upstream data for production of board by Laminex®. Primary data for Laminex® operations was sourced from the period 1st July 2020 to 30th June 2021.

All data in the background system was from the Managed LCA Content 2022 (Sphera 2022). Most datasets have a reference year between 2018 and 2022 and all fall within the 10 year limit allowable for generic data under EN 15804.

Upstream data

Electricity consumption was modelled using New Zealand specific electricity. The nation specific electricity data was based on background data from the Managed LCA Content 2022 (Sphera, 2022). The consumption mix, resulting in GWP of 0.133 kg CO₂ eq. per kwh, is composed of 59.30% hydroelectricity, 17.96% geothermal, 12.93% natural gas, 4.66% wind energy, and the remainder from biogas, photovoltaics, lignite, and fuel oil.

Rooftop photovoltaic cells atop the factory generate electricity. 82% of rooftop PV electricity was directly consumed by the factory floor, with the remaining 18% exported to the grid. Only directly consumed PV electricity is accounted. When PV cells cannot provide all the electricity for the factory the site imports grid electricity.

Table 6: End of life scenarios for products

Process	Unit (expressed per functional unit or per declared unit of components products or materials and by type of material)
Excavator	1 m ² collected separately
Disposal specified by type	1 m ² of Melteca® or Whiteboard going to landfill
Assumptions for scenario development	Diesel consumption for dismantling Whiteboard after use with an Excavator (100kW): 0.172g per kg of particleboard. All laminated board waste is transported from the construction site to landfill via truck. Transport distance is assumed to be 50km with a capacity utilisation of 85%

Transport

Primary transport data was used for transport of production inputs (A2). Any wastes from the production process (A3) are assumed to be transported over a 50 km distance to a treatment or disposal site.

Cut off criteria

Environmental impacts relating to personnel, infrastructure, and production equipment not directly consumed in the process are excluded from the system boundary as per the PCR (IEPDS 2019, 4.3.1).

Thinkstep-anz consistently excludes environmental impacts from infrastructure, construction, production equipment, and tools that are not directly consumed in the production process, ('capital goods') regardless of potential significance.

High-quality infrastructure-related data isn't always available and there is no clear cut-off for what to include. For this reason, capital goods data are applied to LCA studies inconsistently. This is expected to lead to reduced consistency and comparability of EPDs. Capital goods were previously excluded from EPDs, thus including capital goods in current EPDs would further reduce their comparability.

All other reported data was incorporated and modelled using the best available life cycle inventory data.

Allocation

Where subdivision of processes was not possible, allocation rules listed in PCR chapter 4.5 have been applied. Specifically, the data reflects economic allocation, based on Tenon's data, specific to wood board production. No secondary materials are used in board production processes. Allocation for input materials that contain secondary material occurs in the upstream datasets.

End-of-life allocation follows the requirements of EN 15804:2017+A2:2019 6.4.3.3 and generally follows the polluter pays principle.

Assessment Indicators

The results tables describe the different environmental indicators for each product per declared unit, for each declared module. The first section of each table contains the environmental impact indicators, describing the potential environmental impacts of the product as shown in Table 11. The second section shows the resource indicators, describing the use of renewable and non-renewable material resources, renewable and non-renewable primary energy and water, as shown in Table 12. The final section of each table displays the waste and other outputs, as shown in Table 13.

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.

Table 7: Indicators for life cycle impact assessment

Impact category	Abbreviation	Units
Climate change – total	GWP-total	kg of CO ₂ -eq.
Climate change – fossil	GWP-fossil	kg of CO ₂ -eq.
Climate change – biogenic	GWP-biogenic	kg of CO ₂ -eq.
Climate change – land use and land use change	GWP-luluc	kg of CO ₂ -eq.
Ozone depletion	ODP	kg CFC11-eq.
Acidification	AP	Mole of H+ eq.
Eutrophication aquatic freshwater	EP-fw	kg P eq.
Eutrophication aquatic marine	EP-m	kg N eq.
Eutrophication terrestrial	EP-t	Mole of N eq.
Photochemical ozone formation	POFP	kg NMVOC eq.
Depletion of abiotic resources – minerals and metals*	ADP-m&m	kg Sb-eq.
Depletion of abiotic resources – fossil fuels*	ADP-f	MJ
Water Depletion Potential*	WDP	m ³ world equiv.

* The results of this environmental impact indicator should be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

Table 8: Life cycle inventory indicators on use of resources

Indicator	Abbreviation	Units
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	PERE	MJ
Use of renewable primary energy resources used as raw materials	PERM	MJ
Total use of renewable primary energy resources	PERT	MJ
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	PENRE	MJ
Use of non-renewable primary energy resources used as raw materials	PENRM	MJ
Total use of non-renewable primary energy resources	PENRT	MJ
Use of secondary material	SM	kg
Use of renewable secondary fuels	RSF	MJ
Use of non-renewable secondary fuels	NRSF	MJ
Total use of net fresh water	FW	m ³

Table 9: Life cycle inventory indicators on waste categories and output flows

Indicator	Abbreviation	Units
Hazardous waste disposed	HWD	kg
Non-hazardous waste disposed	NHWD	kg
Radioactive waste disposed	RWD	kg
Components for reuse	CRU	kg
Materials for energy recovery	MER	kg
Materials for recycling	MFR	kg
Exported electrical energy	EEE	MJ
Exported thermal energy	EET	MJ

Table 10: Additional Environmental Impact Indicators

Indicator	Abbreviation	Units
Climate Change**	GWP-GHG	kg CO ₂ -eq
Particulate Matter emissions	PM	Disease incidences
Ionising Radiation – human health***	IR	kBq U235 eq.
Eco-toxicity (freshwater)*	ETP-fw	CTUe
Human Toxicity, cancer*	HTP-c	CTUh
Human Toxicity, non-cancer*	HTP-nc	CTUh
Land use related impacts/soil quality*	SGP	Dimensionless

* 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 experience with the indicator.

** This indicator is identical to GWP-total except that the CF for biogenic CO₂ is set to zero. It has been included in the EPD following the PCR.

*** 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 some construction materials, is also not measured by this indicator.

Table 11: Environmental Impact Indicators in accordance with EN15804+A1

Indicator	Abbreviation	Units
Global warming potential	GWP (EN15804+A1)	kg CO ₂ -eq.
Ozone depletion potential	ODP (EN15804+A1)	kg CFC11-eq.
Acidification potential	AP (EN15804+A1)	kg SO ₂ -eq.
Eutrophication potential	EP (EN15804+A1)	kg PO ₄ ³⁻ -eq.
Photochemical ozone creation potential	POCP (EN15804+A1)	kg C ₂ H ₄ -eq.
Abiotic depletion potential for non-fossil resources	ADPE (EN15804+A1)	kg Sb-eq.
Abiotic depletion potential for fossil resources	ADPF (EN15804+A1)	MJ

For Melteca® and Whiteboard boards, the following indicators are not relevant, hence result in zero values:

- **Components for re-use (CRU) is zero since there are none produced.**
- **Materials for energy recovery (MER) is zero since no credits are claimed for any incinerated wastes, applying the cut-off approach.**
- **Exported electrical energy (EEE) is zero since there is none produced.**
- **Exported thermal energy (EET) is zero since there is none produced.**

Environmental Performance

Results for 1 m² of PBS09

Table 12: Environmental impact EN15804+A2

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO ₂ -eq.	-6.22	0.00433	0.0434	0.0512	11.4	-0.00595
GWPf	kg CO ₂ -eq.	3.67	0.00434	0.0430	0.0507	0.347	-0.00590
GWPb	kg CO ₂ -eq.	-9.89	-5.66E-06	3.14E-04	4.71E-04	11.1	-5.47E-05
GWPluc	kg CO ₂ -eq.	7.47E-04	3.14E-08	2.94E-05	1.30E-05	1.99E-04	-1.51E-06
ODP	kg CFC11-eq.	2.20E-11	3.44E-16	3.24E-15	8.97E-14	5.16E-13	-1.04E-14
AP	Mole of H ⁺ eq.	0.0230	2.06E-05	2.32E-04	1.90E-04	0.00137	-2.21E-05
EPfw	kg P eq.	1.09E-05	7.61E-10	2.74E-07	1.92E-07	2.68E-07	-2.24E-08
EPm	kg N eq.	0.00714	9.96E-06	1.18E-04	5.42E-05	4.12E-04	-6.30E-06
EPt	Mole of N eq.	0.0835	1.09E-04	0.00129	7.51E-04	0.00452	-8.73E-05
POFP	kg NMVOC eq.	0.0367	2.79E-05	2.19E-04	1.38E-04	0.00135	-1.60E-05
ADPmm	kg Sb-eq.	1.02E-06	5.29E-11	1.40E-08	9.90E-09	3.25E-08	-1.15E-09
ADPmf	MJ	63.4	0.0575	0.562	0.501	4.61	-0.0582
WDP	m ³ world equiv.	1.26	3.22E-05	0.00329	0.0807	-5.58E-04	-0.00938

Table 13: Use of resources

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	37.2	2.67E-04	0.0249	2.56	0.546	-0.298
PERM	MJ	107	0	0	0	0	0
PERT	MJ	144	2.67E-04	0.0249	2.56	0.546	-0.298
PENRE	MJ	51.4	0.0575	0.603	0.501	4.61	-0.0582
PENRM	MJ	12.2	0	0	0	0	0
PENRT	MJ	63.6	0.0575	0.603	0.501	4.61	-0.0582
SM	kg	0	0	0	0	0	0
RSF	MJ	9.78E-27	0	0	0	0	0
NRSF	MJ	1.15E-25	0	0	0	0	0
FW	m ³	0.101	4.84E-07	1.06E-04	0.00658	5.00E-04	-7.66E-04

Table 14: Waste categories and output flows

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	2.22E-07	6.24E-14	2.49E-12	3.57E-11	2.89E-10	-4.15E-12
NHWD	kg	0.148	8.21E-07	5.59E-05	4.11E-04	6.80	-4.78E-05
RWD	kg	5.72E-04	8.43E-10	1.43E-06	2.57E-07	2.76E-05	-2.99E-08
CRU	kg	0	0	0	0	0	0
MFR	kg	1.47	0	0	0	0	0
MER	kg	0.0610	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0

Table 15: Biogenic carbon content

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
BCC-prod	kg	2.91	0	0	0	0	0
BCC-pack	kg	0.303	0	0	0	0	0

Table 16: Additional Indicators

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG	kg CO2-eq.	3.76	0.00434	0.0431	0.0512	0.982	-0.00596
PM	Disease incidences	2.81E-07	2.33E-10	1.32E-09	1.28E-09	1.25E-08	-1.49E-10
IR	kBq U235 eq.	0.0624	1.09E-07	1.21E-04	2.96E-05	0.00277	-3.44E-06
ETf	CTUe	72.4	0.0144	0.454	6.22	2.41	-0.723
HTc	CTUh	2.54E-08	2.42E-13	7.26E-12	3.00E-11	1.88E-10	-3.49E-12
HTnc	CTUh	6.97E-08	1.52E-11	2.98E-10	1.39E-10	1.84E-08	-1.62E-11
SQP	Pt	85.4	1.32E-04	0.127	0.319	0.343	-0.0371

Table 17: Environmental impact EN15804+A1

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO2-eq.	-6.68	0.00427	0.0426	0.0501	11.2	-0.00583
ODP	kg CFC11-eq.	2.74E-11	4.05E-16	3.82E-15	1.06E-13	6.08E-13	-1.23E-14
AP	kg SO2-eq.	0.0163	1.43E-05	1.57E-04	1.34E-04	0.00106	-1.56E-05
EP	kg PO43-- eq.	0.00334	3.34E-06	4.24E-05	2.53E-05	1.42E-04	-2.95E-06
POCP	kg C2H4-eq.	0.0231	1.41E-06	-6.87E-05	8.07E-06	1.72E-04	-9.39E-07
ADPE	kg Sb-eq.	1.02E-06	5.29E-11	1.40E-08	9.89E-09	3.26E-08	-1.15E-09
ADPF	MJ	53.1	0.0575	0.502	0.498	4.53	-0.0579

Environmental Performance

Results for 1 m² of PBS12

Table 18: Environmental impact EN15804+A2

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO ₂ -eq.	-8.96	0.00557	0.0557	0.0658	14.9	-0.00784
GWPf	kg CO ₂ -eq.	4.18	0.00558	0.0553	0.0651	0.454	-0.00777
GWPb	kg CO ₂ -eq.	-13.1	-7.27E-06	4.04E-04	6.05E-04	14.5	-7.21E-05
GWPluc	kg CO ₂ -eq.	8.07E-04	4.04E-08	3.78E-05	1.67E-05	2.57E-04	-1.99E-06
ODP	kg CFC11-eq.	2.21E-11	4.42E-16	4.17E-15	1.15E-13	6.72E-13	-1.37E-14
AP	Mole of H ⁺ eq.	0.0271	2.65E-05	2.98E-04	2.44E-04	0.00178	-2.91E-05
EPfw	kg P eq.	1.17E-05	9.78E-10	3.52E-07	2.47E-07	3.47E-07	-2.95E-08
EPm	kg N eq.	0.00827	1.28E-05	1.52E-04	6.96E-05	5.36E-04	-8.30E-06
EPt	Mole of N eq.	0.0985	1.40E-04	0.00166	9.65E-04	0.00589	-1.15E-04
POFP	kg NMVOC eq.	0.0445	3.59E-05	2.82E-04	1.77E-04	0.00176	-2.11E-05
ADPmm	kg Sb-eq.	1.15E-06	6.80E-11	1.79E-08	1.27E-08	4.24E-08	-1.52E-09
ADPmf	MJ	70.5	0.0739	0.722	0.643	6.03	-0.0767
WDP	m ³ world equiv.	1.60	4.13E-05	0.00423	0.104	-0.00110	-0.0124

Table 19: Use of resources

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	43.6	3.43E-04	0.0320	3.29	0.713	-0.393
PERM	MJ	141	0	0	0	0	0
PERT	MJ	184	3.43E-04	0.0320	3.29	0.713	-0.393
PENRE	MJ	56.9	0.0739	0.775	0.643	6.03	-0.0767
PENRM	MJ	13.7	0	0	0	0	0
PENRT	MJ	70.7	0.0739	0.775	0.643	6.03	-0.0767
SM	kg	0	0	0	0	0	0
RSF	MJ	1.29E-26	0	0	0	0	0
NRSF	MJ	1.52E-25	0	0	0	0	0
FW	m ³	0.130	6.22E-07	1.36E-04	0.00846	6.48E-04	-0.00101

Table 20: Waste categories and output flows

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	2.21E-07	8.02E-14	3.20E-12	4.59E-11	3.78E-10	-5.47E-12
NHWD	kg	0.161	1.06E-06	7.19E-05	5.28E-04	8.73	-6.30E-05
RWD	kg	6.27E-04	1.08E-09	1.83E-06	3.31E-07	3.59E-05	-3.94E-08
CRU	kg	0	0	0	0	0	0
MFR	kg	1.60	0	0	0	0	0
MER	kg	0.0805	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0

Table 21: Biogenic carbon content

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
BCC-prod	kg	3.80	0	0	0	0	0
BCC-pack	kg	0.303	0	0	0	0	0

Table 22: Additional Indicators

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG	kg CO2-eq.	4.26	0.00558	0.0553	0.0658	1.29	-0.00785
PM	Disease incidences	3.30E-07	3.00E-10	1.70E-09	1.65E-09	1.61E-08	-1.97E-10
IR	kBq U235 eq.	0.0671	1.40E-07	1.56E-04	3.80E-05	0.00360	-4.53E-06
ETf	CTUe	90.1	0.0186	0.583	7.99	3.15	-0.952
HTc	CTUh	2.89E-08	3.12E-13	9.32E-12	3.86E-11	2.44E-10	-4.60E-12
HTnc	CTUh	7.36E-08	1.95E-11	3.83E-10	1.79E-10	2.38E-08	-2.13E-11
SQP	Pt	91.6	1.70E-04	0.164	0.409	0.442	-0.0488

Table 23: Environmental impact EN15804+A1

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO2-eq.	-9.53	0.00549	0.0548	0.0644	14.6	-0.00767
ODP	kg CFC11-eq.	2.76E-11	5.20E-16	4.91E-15	1.36E-13	7.91E-13	-1.62E-14
AP	kg SO2-eq.	0.0192	1.84E-05	2.01E-04	1.72E-04	0.00138	-2.05E-05
EP	kg PO43-- eq.	0.00389	4.29E-06	5.45E-05	3.25E-05	1.86E-04	-3.88E-06
POCP	kg C2H4-eq.	0.0293	1.82E-06	-8.83E-05	1.04E-05	2.25E-04	-1.24E-06
ADPE	kg Sb-eq.	1.15E-06	6.80E-11	1.80E-08	1.27E-08	4.26E-08	-1.52E-09
ADPF	MJ	57.6	0.0739	0.645	0.639	5.92	-0.0762

Environmental Performance

Results for 1 m² of PBS16

Table 24: Environmental impact EN15804+A2

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO ₂ -eq.	-12.9	0.00721	0.0722	0.0852	19.6	-0.0104
GWPf	kg CO ₂ -eq.	4.64	0.00722	0.0716	0.0844	0.597	-0.0103
GWPb	kg CO ₂ -eq.	-17.6	-9.42E-06	5.23E-04	7.84E-04	19.0	-9.53E-05
GWPluc	kg CO ₂ -eq.	8.75E-04	5.24E-08	4.89E-05	2.16E-05	3.33E-04	-2.62E-06
ODP	kg CFC11-eq.	2.23E-11	5.73E-16	5.40E-15	1.49E-13	8.80E-13	-1.82E-14
AP	Mole of H ⁺ eq.	0.0300	3.43E-05	3.86E-04	3.16E-04	0.00232	-3.85E-05
EPfw	kg P eq.	1.26E-05	1.27E-09	4.56E-07	3.20E-07	4.53E-07	-3.89E-08
EPm	kg N eq.	0.00910	1.66E-05	1.97E-04	9.02E-05	7.02E-04	-1.10E-05
EPt	Mole of N eq.	0.109	1.82E-04	0.00215	0.00125	0.00771	-1.52E-04
POFP	kg NMVOC eq.	0.0526	4.65E-05	3.65E-04	2.29E-04	0.00230	-2.78E-05
ADPmm	kg Sb-eq.	1.25E-06	8.80E-11	2.32E-08	1.65E-08	5.57E-08	-2.00E-09
ADPmf	MJ	76.2	0.0957	0.935	0.833	7.92	-0.101
WDP	m ³ world equiv.	2.03	5.35E-05	0.00548	0.134	-0.00183	-0.0163

Table 25: Use of resources

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	52.1	4.45E-04	0.0414	4.27	0.936	-0.519
PERM	MJ	187	0	0	0	0	0
PERT	MJ	239	4.45E-04	0.0414	4.27	0.936	-0.519
PENRE	MJ	61.1	0.0957	1.00	0.834	7.93	-0.101
PENRM	MJ	15.3	0	0	0	0	0
PENRT	MJ	76.4	0.0957	1.00	0.834	7.93	-0.101
SM	kg	0	0	0	0	0	0
RSF	MJ	1.72E-26	0	0	0	0	0
NRSF	MJ	2.02E-25	0	0	0	0	0
FW	m ³	0.167	8.06E-07	1.76E-04	0.0110	8.45E-04	-0.00133

Table 26: Waste categories and output flows

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	2.19E-07	1.04E-13	4.14E-12	5.94E-11	4.98E-10	-7.23E-12
NHWD	kg	0.177	1.37E-06	9.31E-05	6.84E-04	11.3	-8.32E-05
RWD	kg	6.59E-04	1.40E-09	2.38E-06	4.29E-07	4.70E-05	-5.21E-08
CRU	kg	0	0	0	0	0	0
MFR	kg	1.53	0	0	0	0	0
MER	kg	0.106	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0

Table 27: Biogenic carbon content

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
BCC-prod	kg	5.01	0	0	0	0	0
BCC-pack	kg	0.302	0	0	0	0	0

Table 28: Additional Indicators

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG	kg CO2-eq.	4.73	0.00723	0.0717	0.0853	1.70	-0.0104
PM	Disease incidences	3.63E-07	3.88E-10	2.20E-09	2.14E-09	2.10E-08	-2.60E-10
IR	kBq U235 eq.	0.0697	1.82E-07	2.01E-04	4.92E-05	0.00470	-5.99E-06
ETf	CTUe	112	0.0241	0.755	10.3	4.14	-1.26
HTc	CTUh	3.08E-08	4.04E-13	1.21E-11	5.00E-11	3.18E-10	-6.08E-12
HTnc	CTUh	7.79E-08	2.52E-11	4.96E-10	2.32E-10	3.11E-08	-2.82E-11
SQP	Pt	99.6	2.20E-04	0.212	0.531	0.575	-0.0645

Table 29: Environmental impact EN15804+A1

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO2-eq.	-13.6	0.00711	0.0710	0.0834	19.2	-0.0101
ODP	kg CFC11-eq.	2.79E-11	6.74E-16	6.36E-15	1.76E-13	1.04E-12	-2.14E-14
AP	kg SO2-eq.	0.0213	2.39E-05	2.61E-04	2.23E-04	0.00180	-2.71E-05
EP	kg PO43-- eq.	0.00428	5.56E-06	7.06E-05	4.22E-05	2.43E-04	-5.13E-06
POCP	kg C2H4-eq.	0.0364	2.35E-06	-1.14E-04	1.34E-05	2.96E-04	-1.63E-06
ADPE	kg Sb-eq.	1.26E-06	8.81E-11	2.33E-08	1.65E-08	5.60E-08	-2.00E-09
ADPF	MJ	61.8	0.0957	0.835	0.828	7.78	-0.101

Environmental Performance

Results for 1 m² of PBS18

Table 30: Environmental impact EN15804+A2

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO ₂ -eq.	-14.8	0.00804	0.0804	0.0949	22.0	-0.0116
GWPf	kg CO ₂ -eq.	4.96	0.00805	0.0798	0.0940	0.668	-0.0115
GWPb	kg CO ₂ -eq.	-19.7	-1.05E-05	5.83E-04	8.73E-04	21.3	-1.07E-04
GWPluc	kg CO ₂ -eq.	9.15E-04	5.83E-08	5.45E-05	2.40E-05	3.71E-04	-2.94E-06
ODP	kg CFC11-eq.	2.25E-11	6.38E-16	6.01E-15	1.66E-13	9.84E-13	-2.04E-14
AP	Mole of H ⁺ eq.	0.0325	3.82E-05	4.30E-04	3.52E-04	0.00260	-4.31E-05
EPfw	kg P eq.	1.31E-05	1.41E-09	5.08E-07	3.57E-07	5.06E-07	-4.37E-08
EPm	kg N eq.	0.00979	1.85E-05	2.19E-04	1.00E-04	7.85E-04	-1.23E-05
EPt	Mole of N eq.	0.118	2.02E-04	0.00240	0.00139	0.00862	-1.70E-04
POFP	kg NMVOC eq.	0.0575	5.18E-05	4.07E-04	2.55E-04	0.00258	-3.12E-05
ADPmm	kg Sb-eq.	1.33E-06	9.81E-11	2.59E-08	1.84E-08	6.23E-08	-2.25E-09
ADPf	MJ	80.6	0.107	1.04	0.928	8.87	-0.114
WDP	m ³ world equiv.	2.25	5.96E-05	0.00610	0.150	-0.00219	-0.0183

Table 31: Use of resources

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	56.4	4.96E-04	0.0461	4.75	1.05	-0.582
PERM	MJ	209	0	0	0	0	0
PERT	MJ	265	4.96E-04	0.0461	4.75	1.05	-0.582
PENRE	MJ	64.5	0.107	1.12	0.929	8.87	-0.114
PENRM	MJ	16.3	0	0	0	0	0
PENRT	MJ	80.8	0.107	1.12	0.929	8.87	-0.114
SM	kg	0	0	0	0	0	0
RSF	MJ	1.93E-26	0	0	0	0	0
NRSF	MJ	2.26E-25	0	0	0	0	0
FW	m ³	0.186	8.98E-07	1.96E-04	0.0122	9.43E-04	-0.00149

Table 32: Waste categories and output flows

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	2.19E-07	1.16E-13	4.61E-12	6.62E-11	5.57E-10	-8.10E-12
NHWD	kg	0.186	1.52E-06	1.04E-04	7.62E-04	12.6	-9.33E-05
RWD	kg	6.92E-04	1.56E-09	2.65E-06	4.78E-07	5.25E-05	-5.85E-08
CRU	kg	0	0	0	0	0	0
MFR	kg	1.57	0	0	0	0	0
MER	kg	0.119	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0

Table 33: Biogenic carbon content

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
BCC-prod	kg	5.61	0	0	0	0	0
BCC-pack	kg	0.302	0	0	0	0	0

Table 34: Additional Indicators

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG	kg CO ₂ -eq.	5.04	0.00805	0.0799	0.0950	1.91	-0.0116
PM	Disease incidences	3.92E-07	4.33E-10	2.45E-09	2.38E-09	2.35E-08	-2.91E-10
IR	kBq U235 eq.	0.0725	2.02E-07	2.24E-04	5.49E-05	0.00525	-6.71E-06
ETf	CTUe	124	0.0268	0.842	11.5	4.63	-1.41
HTc	CTUh	3.29E-08	4.50E-13	1.35E-11	5.57E-11	3.55E-10	-6.82E-12
HTnc	CTUh	8.05E-08	2.81E-11	5.53E-10	2.58E-10	3.47E-08	-3.16E-11
SQP	Pt	104	2.45E-04	0.236	0.591	0.641	-0.0723

Table 35: Environmental impact EN15804+A1

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO ₂ -eq.	-15.5	0.00792	0.0790	0.0929	21.5	-0.0114
ODP	kg CFC11-eq.	2.81E-11	7.51E-16	7.08E-15	1.96E-13	1.16E-12	-2.40E-14
AP	kg SO ₂ -eq.	0.0230	2.66E-05	2.91E-04	2.48E-04	0.00201	-3.04E-05
EP	kg PO ₄ ³⁻ eq.	0.00461	6.19E-06	7.86E-05	4.70E-05	2.72E-04	-5.75E-06
POCP	kg C ₂ H ₄ -eq.	0.0403	2.62E-06	-1.27E-04	1.50E-05	3.32E-04	-1.83E-06
ADPE	kg Sb-eq.	1.34E-06	9.81E-11	2.59E-08	1.83E-08	6.27E-08	-2.25E-09
ADPF	MJ	64.7	0.107	0.930	0.923	8.71	-0.113

Environmental Performance

Results for 1 m² of PBS25

Table 36: Environmental impact EN15804+A2

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO2-eq.	-20.7	0.0109	0.109	0.129	28.5	-0.0160
GWPf	kg CO2-eq.	6.48	0.0109	0.108	0.128	0.918	-0.0159
GWPb	kg CO2-eq.	-27.2	-1.43E-05	7.92E-04	0.00119	27.6	-1.47E-04
GWPluc	kg CO2-eq.	0.00109	7.92E-08	7.41E-05	3.27E-05	5.04E-04	-4.06E-06
ODP	kg CFC11-eq.	2.34E-11	8.67E-16	8.17E-15	2.26E-13	1.35E-12	-2.81E-14
AP	Mole of H+ eq.	0.0460	5.20E-05	5.84E-04	4.79E-04	0.00355	-5.95E-05
EPfw	kg P eq.	1.54E-05	1.92E-09	6.90E-07	4.85E-07	6.91E-07	-6.03E-08
EPm	kg N eq.	0.0135	2.51E-05	2.98E-04	1.36E-04	0.00108	-1.70E-05
EPt	Mole of N eq.	0.167	2.75E-04	0.00326	0.00189	0.0118	-2.35E-04
POFP	kg NMVOC eq.	0.0796	7.03E-05	5.52E-04	3.47E-04	0.00353	-4.31E-05
ADPmm	kg Sb-eq.	1.73E-06	1.33E-10	3.52E-08	2.49E-08	8.56E-08	-3.10E-09
ADPmf	MJ	104	0.145	1.41	1.26	12.2	-0.157
WDP	m ³ world equiv.	3.07	8.10E-05	0.00829	0.203	-0.00347	-0.0253

Table 37: Use of resources

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	71.8	6.74E-04	0.0627	6.46	1.44	-0.803
PERM	MJ	285	0	0	0	0	0
PERT	MJ	357	6.74E-04	0.0627	6.46	1.44	-0.803
PENRE	MJ	83.2	0.145	1.52	1.26	12.2	-0.157
PENRM	MJ	20.8	0	0	0	0	0
PENRT	MJ	104	0.145	1.52	1.26	12.2	-0.157
SM	kg	0	0	0	0	0	0
RSF	MJ	2.64E-26	0	0	0	0	0
NRSF	MJ	3.10E-25	0	0	0	0	0
FW	m ³	0.255	1.22E-06	2.66E-04	0.0166	0.00129	-0.00206

Table 38: Waste categories and output flows

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	2.19E-07	1.57E-13	6.27E-12	8.99E-11	7.66E-10	-1.12E-11
NHWD	kg	0.219	2.07E-06	1.41E-04	0.00104	17.1	-1.29E-04
RWD	kg	8.89E-04	2.12E-09	3.60E-06	6.49E-07	7.18E-05	-8.07E-08
CRU	kg	0	0	0	0	0	0
MFR	kg	2.35	0	0	0	0	0
MER	kg	0.165	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0

Table 39: Biogenic carbon content

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
BCC-prod	kg	7.62	0	0	0	0	0
BCC-pack	kg	0.302	0	0	0	0	0

Table 40: Additional Indicators

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG	kg CO2-eq.	6.57	0.0109	0.109	0.129	2.63	-0.0160
PM	Disease incidences	5.59E-07	5.88E-10	3.33E-09	3.23E-09	3.20E-08	-4.02E-10
IR	kBq U235 eq.	0.0893	2.75E-07	3.05E-04	7.45E-05	0.00717	-9.26E-06
ETf	CTUe	167	0.0364	1.14	15.7	6.36	-1.95
HTc	CTUh	4.50E-08	6.11E-13	1.83E-11	7.57E-11	4.86E-10	-9.41E-12
HTnc	CTUh	9.21E-08	3.82E-11	7.51E-10	3.51E-10	4.74E-08	-4.36E-11
SQP	Pt	120	3.33E-04	0.321	0.803	0.874	-0.0998

Table 41: Environmental impact EN15804+A1

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO2-eq.	-21.7	0.0108	0.107	0.126	27.9	-0.0157
ODP	kg CFC11-eq.	2.91E-11	1.02E-15	9.62E-15	2.66E-13	1.59E-12	-3.31E-14
AP	kg SO2-eq.	0.0324	3.61E-05	3.95E-04	3.37E-04	0.00275	-4.19E-05
EP	kg PO43-- eq.	0.00641	8.41E-06	1.07E-04	6.38E-05	3.72E-04	-7.93E-06
POCP	kg C2H4-eq.	0.0569	3.56E-06	-1.73E-04	2.03E-05	4.56E-04	-2.53E-06
ADPE	kg Sb-eq.	1.74E-06	1.33E-10	3.52E-08	2.49E-08	8.60E-08	-3.10E-09
ADPF	MJ	79.0	0.145	1.26	1.25	12.0	-0.156

Environmental Performance

Results for 1 m² of PBS30

Table 42: Environmental impact EN15804+A2

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO ₂ -eq.	-25.5	0.0130	0.130	0.153	34.0	-0.0192
GWPf	kg CO ₂ -eq.	7.13	0.0130	0.129	0.152	1.10	-0.0190
GWPb	kg CO ₂ -eq.	-32.7	-1.69E-05	9.41E-04	0.00141	32.9	-1.76E-04
GWPluc	kg CO ₂ -eq.	0.00118	9.42E-08	8.80E-05	3.88E-05	5.99E-04	-4.86E-06
ODP	kg CFC11-eq.	2.39E-11	1.03E-15	9.71E-15	2.69E-13	1.61E-12	-3.36E-14
AP	Mole of H ⁺ eq.	0.0504	6.17E-05	6.94E-04	5.69E-04	0.00423	-7.12E-05
EPfw	kg P eq.	1.66E-05	2.28E-09	8.20E-07	5.76E-07	8.23E-07	-7.21E-08
EPm	kg N eq.	0.0147	2.98E-05	3.54E-04	1.62E-04	0.00128	-2.03E-05
EPt	Mole of N eq.	0.183	3.27E-04	0.00387	0.00225	0.0141	-2.81E-04
POFP	kg NMVOC eq.	0.0903	8.36E-05	6.57E-04	4.12E-04	0.00422	-5.16E-05
ADPmm	kg Sb-eq.	1.89E-06	1.58E-10	4.18E-08	2.96E-08	1.02E-07	-3.71E-09
ADPmf	MJ	112	0.172	1.68	1.50	14.6	-0.188
WDP	m ³ world equiv.	3.62	9.63E-05	0.00985	0.242	-0.00438	-0.0302

Table 43: Use of resources

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	82.5	8.00E-04	0.0745	7.67	1.71	-0.960
PERM	MJ	342	0	0	0	0	0
PERT	MJ	425	8.00E-04	0.0745	7.67	1.71	-0.960
PENRE	MJ	89.5	0.172	1.81	1.50	14.6	-0.188
PENRM	MJ	22.9	0	0	0	0	0
PENRT	MJ	112	0.172	1.81	1.50	14.6	-0.188
SM	kg	0	0	0	0	0	0
RSF	MJ	3.17E-26	0	0	0	0	0
NRSF	MJ	3.72E-25	0	0	0	0	0
FW	m ³	0.302	1.45E-06	3.17E-04	0.0197	0.00153	-0.00247

Table 44: Waste categories and output flows

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	2.19E-07	1.87E-13	7.45E-12	1.07E-10	9.15E-10	-1.34E-11
NHWD	kg	0.241	2.46E-06	1.68E-04	0.00123	20.3	-1.54E-04
RWD	kg	9.43E-04	2.52E-09	4.27E-06	7.71E-07	8.56E-05	-9.65E-08
CRU	kg	0	0	0	0	0	0
MFR	kg	2.50	0	0	0	0	0
MER	kg	0.197	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0

Table 45: Biogenic carbon content

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
BCC-prod	kg	9.12	0	0	0	0	0
BCC-pack	kg	0.302	0	0	0	0	0

Table 46: Additional Indicators

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG	kg CO2-eq.	7.22	0.0130	0.129	0.153	3.14	-0.0192
PM	Disease incidences	6.09E-07	6.99E-10	3.96E-09	3.84E-09	3.81E-08	-4.81E-10
IR	kBq U235 eq.	0.0940	3.27E-07	3.62E-04	8.86E-05	0.00855	-1.11E-05
ETf	CTUe	195	0.0433	1.36	18.6	7.60	-2.33
HTc	CTUh	4.83E-08	7.26E-13	2.17E-11	8.99E-11	5.79E-10	-1.13E-11
HTnc	CTUh	9.80E-08	4.54E-11	8.93E-10	4.17E-10	5.64E-08	-5.21E-11
SQP	Pt	131	3.95E-04	0.381	0.954	1.04	-0.119

Table 47: Environmental impact EN15804+A1

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO2-eq.	-26.8	0.0128	0.128	0.150	33.3	-0.0188
ODP	kg CFC11-eq.	2.97E-11	1.21E-15	1.14E-14	3.16E-13	1.89E-12	-3.96E-14
AP	kg SO2-eq.	0.0355	4.29E-05	4.69E-04	4.00E-04	0.00328	-5.01E-05
EP	kg PO43-- eq.	0.00699	9.99E-06	1.27E-04	7.58E-05	4.44E-04	-9.49E-06
POCP	kg C2H4-eq.	0.0659	4.23E-06	-2.06E-04	2.42E-05	5.45E-04	-3.03E-06
ADPE	kg Sb-eq.	1.89E-06	1.58E-10	4.19E-08	2.96E-08	1.03E-07	-3.71E-09
ADPF	MJ	85.0	0.172	1.50	1.49	14.3	-0.187

Environmental Performance

Results for 1 m² of PBMR09

Table 48: Environmental impact EN15804+A2

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO ₂ -eq.	-6.57	0.00473	0.0473	0.0558	11.9	-0.00655
GWPf	kg CO ₂ -eq.	3.84	0.00473	0.0469	0.0553	0.381	-0.00649
GWPb	kg CO ₂ -eq.	-10.4	-6.17E-06	3.43E-04	5.13E-04	11.5	-6.03E-05
GWPluc	kg CO ₂ -eq.	7.60E-04	3.43E-08	3.20E-05	1.41E-05	2.18E-04	-1.66E-06
ODP	kg CFC11-eq.	2.19E-11	3.75E-16	3.54E-15	9.79E-14	5.66E-13	-1.15E-14
AP	Mole of H ⁺ eq.	0.0251	2.25E-05	2.53E-04	2.07E-04	0.00150	-2.43E-05
EPfw	kg P eq.	1.12E-05	8.30E-10	2.99E-07	2.10E-07	2.93E-07	-2.46E-08
EPm	kg N eq.	0.00775	1.09E-05	1.29E-04	5.91E-05	4.51E-04	-6.94E-06
EPt	Mole of N eq.	0.0895	1.19E-04	0.00141	8.19E-04	0.00496	-9.61E-05
POFP	kg NMVOC eq.	0.0404	3.04E-05	2.39E-04	1.50E-04	0.00148	-1.76E-05
ADPmm	kg Sb-eq.	1.02E-06	5.77E-11	1.52E-08	1.08E-08	3.56E-08	-1.27E-09
ADPmf	MJ	66.5	0.0627	0.612	0.546	5.06	-0.0641
WDP	m ³ world equiv.	1.36	3.51E-05	0.00359	0.0880	-7.30E-04	-0.0103

Table 49: Use of resources

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	39.2	2.91E-04	0.0271	2.79	0.599	-0.328
PERM	MJ	112	0	0	0	0	0
PERT	MJ	151	2.91E-04	0.0271	2.79	0.599	-0.328
PENRE	MJ	48.4	0.0627	0.658	0.546	5.06	-0.0641
PENRM	MJ	18.2	0	0	0	0	0
PENRT	MJ	66.6	0.0627	0.658	0.546	5.06	-0.0641
SM	kg	0	0	0	0	0	0
RSF	MJ	1.02E-26	0	0	0	0	0
NRSF	MJ	1.20E-25	0	0	0	0	0
FW	m ³	0.110	5.28E-07	1.15E-04	0.00718	5.47E-04	-8.43E-04

Table 50: Waste categories and output flows

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	2.22E-07	6.80E-14	2.71E-12	3.89E-11	3.17E-10	-4.57E-12
NHWD	kg	0.151	8.96E-07	6.10E-05	4.48E-04	7.41	-5.26E-05
RWD	kg	5.59E-04	9.19E-10	1.56E-06	2.81E-07	3.03E-05	-3.30E-08
CRU	kg	0	0	0	0	0	0
MFR	kg	1.60	0	0	0	0	0
MER	kg	0.0672	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0

Table 51: Biogenic carbon content

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
BCC-prod	kg	3.05	0	0	0	0	0
BCC-pack	kg	0.303	0	0	0	0	0

Table 52: Additional Indicators

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG	kg CO2-eq.	3.92	0.00473	0.0470	0.0559	1.08	-0.00656
PM	Disease incidences	3.15E-07	2.54E-10	1.44E-09	1.40E-09	1.36E-08	-1.64E-10
IR	kBq U235 eq.	0.0615	1.19E-07	1.32E-04	3.22E-05	0.00303	-3.79E-06
ETf	CTUe	78.2	0.0158	0.495	6.78	2.65	-0.796
HTc	CTUh	2.43E-08	2.64E-13	7.91E-12	3.27E-11	2.05E-10	-3.84E-12
HTnc	CTUh	7.12E-08	1.65E-11	3.25E-10	1.52E-10	2.01E-08	-1.78E-11
SQP	Pt	87.1	1.44E-04	0.139	0.347	0.374	-0.0408

Table 53: Environmental impact EN15804+A1

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO2-eq.	-7.07	0.00466	0.0465	0.0546	11.6	-0.00641
ODP	kg CFC11-eq.	2.74E-11	4.42E-16	4.16E-15	1.15E-13	6.66E-13	-1.35E-14
AP	kg SO2-eq.	0.0181	1.56E-05	1.71E-04	1.46E-04	0.00116	-1.71E-05
EP	kg PO43-- eq.	0.00351	3.64E-06	4.62E-05	2.76E-05	1.56E-04	-3.24E-06
POCP	kg C2H4-eq.	0.0254	1.54E-06	-7.49E-05	8.80E-06	1.89E-04	-1.03E-06
ADPE	kg Sb-eq.	1.03E-06	5.77E-11	1.52E-08	1.08E-08	3.58E-08	-1.27E-09
ADPF	MJ	56.6	0.0627	0.547	0.543	4.97	-0.0637

Environmental Performance

Results for 1 m² of PBMR12

Table 54: Environmental impact EN15804+A2

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO ₂ -eq.	-9.42	0.00609	0.0610	0.0719	15.5	-0.00864
GWPf	kg CO ₂ -eq.	4.39	0.00610	0.0605	0.0713	0.500	-0.00856
GWPb	kg CO ₂ -eq.	-13.8	-7.95E-06	4.42E-04	6.62E-04	15.0	-7.95E-05
GWPluc	kg CO ₂ -eq.	8.25E-04	4.42E-08	4.13E-05	1.82E-05	2.81E-04	-2.19E-06
ODP	kg CFC11-eq.	2.21E-11	4.84E-16	4.56E-15	1.26E-13	7.38E-13	-1.52E-14
AP	Mole of H ⁺ eq.	0.0299	2.90E-05	3.26E-04	2.67E-04	0.00195	-3.21E-05
EPfw	kg P eq.	1.21E-05	1.07E-09	3.85E-07	2.70E-07	3.81E-07	-3.25E-08
EPm	kg N eq.	0.00908	1.40E-05	1.66E-04	7.61E-05	5.89E-04	-9.15E-06
EPt	Mole of N eq.	0.106	1.53E-04	0.00182	0.00106	0.00647	-1.27E-04
POFP	kg NMVOC eq.	0.0493	3.92E-05	3.08E-04	1.93E-04	0.00193	-2.32E-05
ADPmm	kg Sb-eq.	1.15E-06	7.43E-11	1.96E-08	1.39E-08	4.66E-08	-1.67E-09
ADPmf	MJ	74.6	0.0808	0.789	0.704	6.63	-0.0845
WDP	m ³ world equiv.	1.74	4.52E-05	0.00462	0.113	-0.00133	-0.0136

Table 55: Use of resources

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	46.3	3.76E-04	0.0350	3.60	0.784	-0.433
PERM	MJ	147	0	0	0	0	0
PERT	MJ	194	3.76E-04	0.0350	3.60	0.784	-0.433
PENRE	MJ	53.0	0.0808	0.848	0.704	6.63	-0.0845
PENRM	MJ	21.7	0	0	0	0	0
PENRT	MJ	74.7	0.0808	0.848	0.704	6.63	-0.0845
SM	kg	0	0	0	0	0	0
RSF	MJ	1.35E-26	0	0	0	0	0
NRSF	MJ	1.59E-25	0	0	0	0	0
FW	m ³	0.142	6.80E-07	1.49E-04	0.00925	7.10E-04	-0.00111

Table 56: Waste categories and output flows

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	2.20E-07	8.77E-14	3.50E-12	5.02E-11	4.16E-10	-6.03E-12
NHWD	kg	0.165	1.15E-06	7.86E-05	5.78E-04	9.55	-6.94E-05
RWD	kg	6.12E-04	1.18E-09	2.01E-06	3.62E-07	3.94E-05	-4.35E-08
CRU	kg	0	0	0	0	0	0
MFR	kg	1.75	0	0	0	0	0
MER	kg	0.0887	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0

Table 57: Biogenic carbon content

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
BCC-prod	kg	3.98	0	0	0	0	0
BCC-pack	kg	0.303	0	0	0	0	0

Table 58: Additional Indicators

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG	kg CO2-eq.	4.48	0.00610	0.0605	0.0720	1.42	-0.00865
PM	Disease incidences	3.75E-07	3.28E-10	1.86E-09	1.80E-09	1.77E-08	-2.17E-10
IR	kBq U235 eq.	0.0659	1.53E-07	1.70E-04	4.16E-05	0.00394	-4.99E-06
ETf	CTUe	97.7	0.0203	0.638	8.74	3.46	-1.05
HTc	CTUh	2.75E-08	3.41E-13	1.02E-11	4.22E-11	2.67E-10	-5.07E-12
HTnc	CTUh	7.57E-08	2.13E-11	4.19E-10	1.96E-10	2.61E-08	-2.35E-11
SQP	Pt	93.9	1.86E-04	0.179	0.448	0.484	-0.0538

Table 59: Environmental impact EN15804+A1

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO2-eq.	-10.0	0.00600	0.0599	0.0704	15.2	-0.00846
ODP	kg CFC11-eq.	2.76E-11	5.69E-16	5.37E-15	1.49E-13	8.69E-13	-1.78E-14
AP	kg SO2-eq.	0.0215	2.01E-05	2.20E-04	1.88E-04	0.00151	-2.26E-05
EP	kg PO43-- eq.	0.00412	4.69E-06	5.96E-05	3.56E-05	2.04E-04	-4.28E-06
POCP	kg C2H4-eq.	0.0322	1.99E-06	-9.66E-05	1.13E-05	2.48E-04	-1.36E-06
ADPE	kg Sb-eq.	1.16E-06	7.44E-11	1.96E-08	1.39E-08	4.69E-08	-1.67E-09
ADPF	MJ	62.3	0.0808	0.705	0.699	6.51	-0.0840

Environmental Performance

Results for 1 m² of PBMR16

Table 60: Environmental impact EN15804+A2

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO2-eq.	-13.2	0.00791	0.0792	0.0934	20.4	-0.0114
GWPf	kg CO2-eq.	5.13	0.00792	0.0785	0.0926	0.657	-0.0113
GWPb	kg CO2-eq.	-18.3	-1.03E-05	5.74E-04	8.59E-04	19.8	-1.05E-04
GWPluc	kg CO2-eq.	9.15E-04	5.74E-08	5.37E-05	2.37E-05	3.65E-04	-2.89E-06
ODP	kg CFC11-eq.	2.25E-11	6.28E-16	5.92E-15	1.64E-13	9.68E-13	-2.00E-14
AP	Mole of H+ eq.	0.0362	3.76E-05	4.23E-04	3.47E-04	0.00255	-4.24E-05
EPfw	kg P eq.	1.34E-05	1.39E-09	5.00E-07	3.51E-07	4.98E-07	-4.30E-08
EPm	kg N eq.	0.0108	1.82E-05	2.16E-04	9.89E-05	7.73E-04	-1.21E-05
EPt	Mole of N eq.	0.129	1.99E-04	0.00236	0.00137	0.00849	-1.68E-04
POFP	kg NMVOC eq.	0.0605	5.10E-05	4.00E-04	2.51E-04	0.00254	-3.07E-05
ADPmm	kg Sb-eq.	1.33E-06	9.66E-11	2.55E-08	1.81E-08	6.13E-08	-2.21E-09
ADPmf	MJ	85.2	0.105	1.03	0.914	8.73	-0.112
WDP	m ³ world equiv.	2.24	5.87E-05	0.00601	0.147	-0.00214	-0.0180

Table 61: Use of resources

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	55.7	4.88E-04	0.0454	4.68	1.03	-0.572
PERM	MJ	194	0	0	0	0	0
PERT	MJ	250	4.88E-04	0.0454	4.68	1.03	-0.572
PENRE	MJ	58.8	0.105	1.10	0.914	8.73	-0.112
PENRM	MJ	26.6	0	0	0	0	0
PENRT	MJ	85.4	0.105	1.10	0.914	8.73	-0.112
SM	kg	0	0	0	0	0	0
RSF	MJ	1.79E-26	0	0	0	0	0
NRSF	MJ	2.10E-25	0	0	0	0	0
FW	m ³	0.184	8.84E-07	1.93E-04	0.0120	9.28E-04	-0.00147

Table 62: Waste categories and output flows

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	2.19E-07	1.14E-13	4.54E-12	6.52E-11	5.48E-10	-7.97E-12
NHWD	kg	0.185	1.50E-06	1.02E-04	7.51E-04	12.4	-9.18E-05
RWD	kg	6.84E-04	1.54E-09	2.61E-06	4.70E-07	5.17E-05	-5.75E-08
CRU	kg	0	0	0	0	0	0
MFR	kg	1.67	0	0	0	0	0
MER	kg	0.117	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0

Table 63: Biogenic carbon content

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
BCC-prod	kg	5.20	0	0	0	0	0
BCC-pack	kg	0.302	0	0	0	0	0

Table 64: Additional Indicators

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG	kg CO2-eq.	5.21	0.00792	0.0786	0.0935	1.87	-0.0114
PM	Disease incidences	4.55E-07	4.26E-10	2.41E-09	2.34E-09	2.31E-08	-2.87E-10
IR	kBq U235 eq.	0.0721	1.99E-07	2.21E-04	5.40E-05	0.00516	-6.60E-06
ETf	CTUe	124	0.0264	0.828	11.3	4.56	-1.39
HTc	CTUh	3.18E-08	4.43E-13	1.32E-11	5.48E-11	3.50E-10	-6.70E-12
HTnc	CTUh	8.15E-08	2.77E-11	5.44E-10	2.54E-10	3.41E-08	-3.11E-11
SQP	Pt	103	2.41E-04	0.233	0.582	0.631	-0.0712

Table 65: Environmental impact EN15804+A1

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO2-eq.	-13.9	0.00780	0.0778	0.0914	20.0	-0.0112
ODP	kg CFC11-eq.	2.81E-11	7.40E-16	6.97E-15	1.93E-13	1.14E-12	-2.36E-14
AP	kg SO2-eq.	0.0260	2.62E-05	2.86E-04	2.44E-04	0.00198	-2.99E-05
EP	kg PO43-- eq.	0.00492	6.09E-06	7.74E-05	4.62E-05	2.67E-04	-5.65E-06
POCP	kg C2H4-eq.	0.0405	2.58E-06	-1.25E-04	1.47E-05	3.26E-04	-1.80E-06
ADPE	kg Sb-eq.	1.34E-06	9.66E-11	2.55E-08	1.81E-08	6.17E-08	-2.21E-09
ADPF	MJ	69.7	0.105	0.916	0.909	8.57	-0.111

Environmental Performance

Results for 1 m² of PBMR18

Table 66: Environmental impact EN15804+A2

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO ₂ -eq.	-15.2	0.00882	0.0883	0.104	22.9	-0.0128
GWPf	kg CO ₂ -eq.	5.47	0.00883	0.0876	0.103	0.736	-0.0127
GWPb	kg CO ₂ -eq.	-20.6	-1.15E-05	6.40E-04	9.58E-04	22.1	-1.18E-04
GWPluc	kg CO ₂ -eq.	9.58E-04	6.40E-08	5.98E-05	2.64E-05	4.07E-04	-3.25E-06
ODP	kg CFC11-eq.	2.27E-11	7.00E-16	6.60E-15	1.83E-13	1.08E-12	-2.25E-14
AP	Mole of H ⁺ eq.	0.0389	4.20E-05	4.72E-04	3.87E-04	0.00286	-4.76E-05
EPfw	kg P eq.	1.40E-05	1.55E-09	5.57E-07	3.92E-07	5.56E-07	-4.82E-08
EPm	kg N eq.	0.0116	2.03E-05	2.40E-04	1.10E-04	8.64E-04	-1.36E-05
EPt	Mole of N eq.	0.138	2.22E-04	0.00263	0.00153	0.00949	-1.88E-04
POFP	kg NMVOC eq.	0.0661	5.68E-05	4.46E-04	2.80E-04	0.00284	-3.45E-05
ADPmm	kg Sb-eq.	1.41E-06	1.08E-10	2.84E-08	2.01E-08	6.87E-08	-2.48E-09
ADPmf	MJ	90.0	0.117	1.14	1.02	9.77	-0.125
WDP	m ³ world equiv.	2.48	6.55E-05	0.00670	0.164	-0.00254	-0.0202

Table 67: Use of resources

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	60.4	5.44E-04	0.0506	5.22	1.15	-0.642
PERM	MJ	218	0	0	0	0	0
PERT	MJ	278	5.44E-04	0.0506	5.22	1.15	-0.642
PENRE	MJ	61.6	0.117	1.23	1.02	9.78	-0.125
PENRM	MJ	28.7	0	0	0	0	0
PENRT	MJ	90.2	0.117	1.23	1.02	9.78	-0.125
SM	kg	0	0	0	0	0	0
RSF	MJ	2.01E-26	0	0	0	0	0
NRSF	MJ	2.36E-25	0	0	0	0	0
FW	m ³	0.205	9.85E-07	2.15E-04	0.0134	0.00104	-0.00165

Table 68: Waste categories and output flows

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	2.18E-07	1.27E-13	5.06E-12	7.27E-11	6.14E-10	-8.94E-12
NHWD	kg	0.194	1.67E-06	1.14E-04	8.37E-04	13.8	-1.03E-04
RWD	kg	7.13E-04	1.72E-09	2.91E-06	5.24E-07	5.78E-05	-6.45E-08
CRU	kg	0	0	0	0	0	0
MFR	kg	1.71	0	0	0	0	0
MER	kg	0.132	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0

Table 69: Biogenic carbon content

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
BCC-prod	kg	5.84	0	0	0	0	0
BCC-pack	kg	0.302	0	0	0	0	0

Table 70: Additional Indicators

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG	kg CO2-eq.	5.55	0.00884	0.0877	0.104	2.10	-0.0128
PM	Disease incidences	4.88E-07	4.75E-10	2.69E-09	2.61E-09	2.58E-08	-3.22E-10
IR	kBq U235 eq.	0.0746	2.22E-07	2.46E-04	6.02E-05	0.00577	-7.41E-06
ETf	CTUe	136	0.0294	0.924	12.7	5.10	-1.56
HTc	CTUh	3.35E-08	4.94E-13	1.48E-11	6.11E-11	3.91E-10	-7.52E-12
HTnc	CTUh	8.44E-08	3.08E-11	6.07E-10	2.83E-10	3.81E-08	-3.49E-11
SQP	Pt	107	2.69E-04	0.259	0.649	0.705	-0.0798

Table 71: Environmental impact EN15804+A1

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO2-eq.	-16.0	0.00869	0.0868	0.102	22.4	-0.0125
ODP	kg CFC11-eq.	2.83E-11	8.25E-16	7.77E-15	2.15E-13	1.28E-12	-2.65E-14
AP	kg SO2-eq.	0.0279	2.92E-05	3.19E-04	2.72E-04	0.00221	-3.35E-05
EP	kg PO43-- eq.	0.00526	6.79E-06	8.63E-05	5.15E-05	2.99E-04	-6.34E-06
POCP	kg C2H4-eq.	0.0449	2.88E-06	-1.40E-04	1.64E-05	3.66E-04	-2.02E-06
ADPE	kg Sb-eq.	1.41E-06	1.08E-10	2.85E-08	2.01E-08	6.90E-08	-2.48E-09
ADPF	MJ	73.2	0.117	1.02	1.01	9.60	-0.125

Environmental Performance

Results for 1 m² of PBMR25

Table 72: Environmental impact EN15804+A2

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO2-eq.	-21.0	0.0120	0.120	0.142	29.6	-0.0177
GWPf	kg CO2-eq.	7.17	0.0120	0.119	0.140	1.01	-0.0175
GWPb	kg CO2-eq.	-28.2	-1.57E-05	8.71E-04	0.00130	28.6	-1.63E-04
GWPluc	kg CO2-eq.	0.00114	8.71E-08	8.14E-05	3.59E-05	5.54E-04	-4.48E-06
ODP	kg CFC11-eq.	2.37E-11	9.53E-16	8.99E-15	2.49E-13	1.49E-12	-3.10E-14
AP	Mole of H+ eq.	0.0552	5.71E-05	6.42E-04	5.26E-04	0.00391	-6.57E-05
EPfw	kg P eq.	1.65E-05	2.11E-09	7.59E-07	5.33E-07	7.61E-07	-6.65E-08
EPm	kg N eq.	0.0160	2.76E-05	3.27E-04	1.50E-04	0.00119	-1.87E-05
EPt	Mole of N eq.	0.195	3.02E-04	0.00358	0.00208	0.0130	-2.60E-04
POFP	kg NMVOC eq.	0.0913	7.73E-05	6.08E-04	3.81E-04	0.00389	-4.76E-05
ADPmm	kg Sb-eq.	1.84E-06	1.47E-10	3.87E-08	2.74E-08	9.44E-08	-3.42E-09
ADPmf	MJ	116	0.159	1.56	1.39	13.4	-0.173
WDP	m ³ world equiv.	3.40	8.91E-05	0.00912	0.224	-0.00395	-0.0279

Table 73: Use of resources

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	77.3	7.41E-04	0.0689	7.10	1.58	-0.886
PERM	MJ	296	0	0	0	0	0
PERT	MJ	373	7.41E-04	0.0689	7.10	1.58	-0.886
PENRE	MJ	77.3	0.159	1.67	1.39	13.4	-0.173
PENRM	MJ	39.4	0	0	0	0	0
PENRT	MJ	117	0.159	1.67	1.39	13.4	-0.173
SM	kg	0	0	0	0	0	0
RSF	MJ	2.73E-26	0	0	0	0	0
NRSF	MJ	3.21E-25	0	0	0	0	0
FW	m ³	0.280	1.34E-06	2.93E-04	0.0182	0.00142	-0.00228

Table 74: Waste categories and output flows

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	2.19E-07	1.73E-13	6.89E-12	9.89E-11	8.45E-10	-1.23E-11
NHWD	kg	0.230	2.28E-06	1.55E-04	0.00114	18.8	-1.42E-04
RWD	kg	9.13E-04	2.34E-09	3.96E-06	7.14E-07	7.91E-05	-8.90E-08
CRU	kg	0	0	0	0	0	0
MFR	kg	2.53	0	0	0	0	0
MER	kg	0.182	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0

Table 75: Biogenic carbon content

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
BCC-prod	kg	7.89	0	0	0	0	0
BCC-pack	kg	0.302	0	0	0	0	0

Table 76: Additional Indicators

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG	kg CO ₂ -eq.	7.26	0.0120	0.119	0.142	2.90	-0.0177
PM	Disease incidences	6.99E-07	6.47E-10	3.66E-09	3.56E-09	3.52E-08	-4.44E-10
IR	kBq U235 eq.	0.0917	3.02E-07	3.35E-04	8.19E-05	0.00790	-1.02E-05
ETf	CTUe	185	0.0400	1.26	17.2	7.01	-2.15
HTc	CTUh	4.54E-08	6.72E-13	2.01E-11	8.32E-11	5.35E-10	-1.04E-11
HTnc	CTUh	9.74E-08	4.20E-11	8.26E-10	3.86E-10	5.22E-08	-4.81E-11
SQP	Pt	125	3.66E-04	0.353	0.883	0.962	-0.110

Table 77: Environmental impact EN15804+A1

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO ₂ -eq.	-22.2	0.0118	0.118	0.139	28.9	-0.0173
ODP	kg CFC11-eq.	2.95E-11	1.12E-15	1.06E-14	2.93E-13	1.75E-12	-3.65E-14
AP	kg SO ₂ -eq.	0.0396	3.97E-05	4.34E-04	3.70E-04	0.00303	-4.62E-05
EP	kg PO ₄ ³⁻ eq.	0.00733	9.25E-06	1.17E-04	7.02E-05	4.10E-04	-8.76E-06
POCP	kg C ₂ H ₄ -eq.	0.0627	3.92E-06	-1.90E-04	2.24E-05	5.03E-04	-2.79E-06
ADPE	kg Sb-eq.	1.84E-06	1.47E-10	3.87E-08	2.74E-08	9.49E-08	-3.42E-09
ADPF	MJ	90.7	0.159	1.39	1.38	13.2	-0.172

Environmental Performance

Results for 1 m² of PBMR30

Table 78: Environmental impact EN15804+A2

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO ₂ -eq.	-25.5	0.0143	0.143	0.169	35.3	-0.0212
GWPf	kg CO ₂ -eq.	8.21	0.0143	0.142	0.167	1.21	-0.0210
GWPb	kg CO ₂ -eq.	-33.7	-1.87E-05	0.00104	0.00155	34.1	-1.95E-04
GWPluc	kg CO ₂ -eq.	0.00127	1.04E-07	9.69E-05	4.27E-05	6.60E-04	-5.36E-06
ODP	kg CFC11-eq.	2.44E-11	1.13E-15	1.07E-14	2.96E-13	1.77E-12	-3.71E-14
AP	Mole of H ⁺ eq.	0.0645	6.80E-05	7.64E-04	6.26E-04	0.00467	-7.86E-05
EPfw	kg P eq.	1.82E-05	2.51E-09	9.02E-07	6.34E-07	9.07E-07	-7.96E-08
EPm	kg N eq.	0.0186	3.28E-05	3.89E-04	1.79E-04	0.00142	-2.24E-05
EPt	Mole of N eq.	0.228	3.60E-04	0.00426	0.00247	0.0155	-3.11E-04
POFP	kg NMVOC eq.	0.107	9.20E-05	7.23E-04	4.53E-04	0.00465	-5.69E-05
ADPmm	kg Sb-eq.	2.09E-06	1.74E-10	4.60E-08	3.26E-08	1.13E-07	-4.10E-09
ADPf	MJ	132	0.190	1.85	1.65	16.1	-0.207
WDP	m ³ world equiv.	4.03	1.06E-04	0.0108	0.266	-0.00496	-0.0334

Table 79: Use of resources

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	89.3	8.81E-04	0.0820	8.45	1.89	-1.06
PERM	MJ	353	0	0	0	0	0
PERT	MJ	442	8.81E-04	0.0820	8.45	1.89	-1.06
PENRE	MJ	86.2	0.190	1.99	1.65	16.1	-0.207
PENRM	MJ	46.1	0	0	0	0	0
PENRT	MJ	132	0.190	1.99	1.65	16.1	-0.207
SM	kg	0	0	0	0	0	0
RSF	MJ	3.26E-26	0	0	0	0	0
NRSF	MJ	3.83E-25	0	0	0	0	0
FW	m ³	0.334	1.60E-06	3.49E-04	0.0217	0.00169	-0.00273

Table 80: Waste categories and output flows

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
HWD	kg	2.19E-07	2.06E-13	8.20E-12	1.18E-10	1.01E-09	-1.48E-11
NHWD	kg	0.255	2.71E-06	1.84E-04	0.00136	22.4	-1.70E-04
RWD	kg	0.00102	2.78E-09	4.70E-06	8.49E-07	9.44E-05	-1.07E-07
CRU	kg	0	0	0	0	0	0
MFR	kg	2.73	0	0	0	0	0
MER	kg	0.217	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0
EET	MJ	0	0	0	0	0	0

Table 81: Biogenic carbon content

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
BCC-prod	kg	9.40	0	0	0	0	0
BCC-pack	kg	0.302	0	0	0	0	0

Table 82: Additional Indicators

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP-GHG	kg CO2-eq.	8.31	0.0143	0.142	0.169	3.47	-0.0212
PM	Disease incidences	8.17E-07	7.69E-10	4.36E-09	4.23E-09	4.20E-08	-5.31E-10
IR	kBq U235 eq.	0.101	3.60E-07	3.99E-04	9.75E-05	0.00942	-1.22E-05
ETf	CTUe	218	0.0476	1.50	20.5	8.38	-2.57
HTc	CTUh	5.20E-08	7.99E-13	2.39E-11	9.90E-11	6.38E-10	-1.24E-11
HTnc	CTUh	1.06E-07	4.99E-11	9.83E-10	4.59E-10	6.22E-08	-5.76E-11
SQP	Pt	136	4.35E-04	0.420	1.05	1.15	-0.132

Table 83: Environmental impact EN15804+A1

Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
GWP	kg CO2-eq.	-26.8	0.0141	0.140	0.165	34.6	-0.0207
ODP	kg CFC11-eq.	3.02E-11	1.34E-15	1.26E-14	3.48E-13	2.09E-12	-4.37E-14
AP	kg SO2-eq.	0.0463	4.72E-05	5.16E-04	4.41E-04	0.00362	-5.53E-05
EP	kg PO43-- eq.	0.00851	1.10E-05	1.40E-04	8.35E-05	4.90E-04	-1.05E-05
POCP	kg C2H4-eq.	0.0740	4.66E-06	-2.27E-04	2.66E-05	6.01E-04	-3.34E-06
ADPE	kg Sb-eq.	2.10E-06	1.74E-10	4.61E-08	3.26E-08	1.13E-07	-4.09E-09
ADPF	MJ	101	0.190	1.65	1.64	15.8	-0.206

Results for additional scenarios

Alternative results are declared below for GWP-biogenic, GWP-total, and GWP-GHG. These results use a method that allows consideration of permanent (more than 100 years) storage of biogenic carbon in the product when in landfill.

The current methodology of EN 15804 does not allow consideration of permanent storage (in case of such storage, a virtual emission of biogenic CO₂ is added). The PCR allows declaration of these alternative results

Table 84: EN15804+A2 EPD Results for 1m2 of product - Scenario analysis - Sequestraton at Landfill

Product	Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PBS09	GWP-total	kg of CO ₂ -eq.	-6.78E+00	4.33E-03	4.34E-02	5.12E-02	1.88E+00	-5.95E-03
	GWP-biogenic	kg of CO ₂ -eq.	-1.05E+01	-5.66E-06	3.14E-04	4.71E-04	1.53E+00	-5.47E-05
	GWP-GHG	kg of CO ₂ -eq.	3.76E+00	4.34E-03	4.31E-02	5.12E-02	9.82E-01	-5.96E-03

Product	Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PBS12	GWP-total	kg of CO ₂ -eq.	-9.52E+00	5.57E-03	5.57E-02	6.58E-02	2.23E+00	-7.84E-03
	GWP-biogenic	kg of CO ₂ -eq.	-1.37E+01	-7.27E-06	4.04E-04	6.05E-04	1.78E+00	-7.21E-05
	GWP-GHG	kg of CO ₂ -eq.	4.26E+00	5.58E-03	5.53E-02	6.58E-02	1.29E+00	-7.85E-03

Product	Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PBS16	GWP-total	kg of CO ₂ -eq.	-1.35E+01	7.21E-03	7.22E-02	8.52E-02	2.69E+00	-1.04E-02
	GWP-biogenic	kg of CO ₂ -eq.	-1.81E+01	-9.42E-06	5.23E-04	7.84E-04	2.10E+00	-9.53E-05
	GWP-GHG	kg of CO ₂ -eq.	4.73E+00	7.23E-03	7.17E-02	8.53E-02	1.70E+00	-1.04E-02

Product	Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PBS18	GWP-total	kg of CO ₂ -eq.	-1.54E+01	8.04E-03	8.04E-02	9.49E-02	2.93E+00	-1.16E-02
	GWP-biogenic	kg of CO ₂ -eq.	-2.03E+01	-1.05E-05	5.83E-04	8.73E-04	2.26E+00	-1.07E-04
	GWP-GHG	kg of CO ₂ -eq.	5.04E+00	8.05E-03	7.99E-02	9.50E-02	1.91E+00	-1.16E-02

Product	Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PBS25	GWP-total	kg of CO ₂ -eq.	-2.12E+01	1.09E-02	1.09E-01	1.29E-01	3.73E+00	-1.60E-02
	GWP-biogenic	kg of CO ₂ -eq.	-2.77E+01	-1.43E-05	7.92E-04	1.19E-03	2.82E+00	-1.47E-04
	GWP-GHG	kg of CO ₂ -eq.	6.57E+00	1.09E-02	1.09E-01	1.29E-01	2.63E+00	-1.60E-02

Product	Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PBS30	GWP-total	kg of CO ₂ -eq.	-2.61E+01	1.30E-02	1.30E-01	1.53E-01	4.31E+00	-1.92E-02
	GWP-biogenic	kg of CO ₂ -eq.	-3.32E+01	-1.69E-05	9.41E-04	1.41E-03	3.21E+00	-1.76E-04
	GWP-GHG	kg of CO ₂ -eq.	7.22E+00	1.30E-02	1.29E-01	1.53E-01	3.14E+00	-1.92E-02

Product	Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PBMR09	GWP-total	kg of CO2-eq.	-7.10E+00	4.73E-03	4.73E-02	5.58E-02	1.99E+00	-6.55E-03
	GWP-biogenic	kg of CO2-eq.	-1.09E+01	-6.17E-06	3.43E-04	5.13E-04	1.61E+00	-6.03E-05
	GWP-GHG	kg of CO2-eq.	3.92E+00	4.73E-03	4.70E-02	5.59E-02	1.08E+00	-6.56E-03

Product	Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PBMR12	GWP-total	kg of CO2-eq.	-9.95E+00	6.09E-03	6.10E-02	7.19E-02	2.38E+00	-8.64E-03
	GWP-biogenic	kg of CO2-eq.	-1.43E+01	-7.95E-06	4.42E-04	6.62E-04	1.88E+00	-7.95E-05
	GWP-GHG	kg of CO2-eq.	4.48E+00	6.10E-03	6.05E-02	7.20E-02	1.42E+00	-8.65E-03

Product	Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PBMR16	GWP-total	kg of CO2-eq.	-1.37E+01	7.91E-03	7.92E-02	9.34E-02	2.89E+00	-1.14E-02
	GWP-biogenic	kg of CO2-eq.	-1.88E+01	-1.03E-05	5.74E-04	8.59E-04	2.23E+00	-1.05E-04
	GWP-GHG	kg of CO2-eq.	5.21E+00	7.92E-03	7.86E-02	9.35E-02	1.87E+00	-1.14E-02

Product	Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PBMR18	GWP-total	kg of CO2-eq.	-1.57E+01	8.82E-03	8.83E-02	1.04E-01	3.15E+00	-1.28E-02
	GWP-biogenic	kg of CO2-eq.	-2.11E+01	-1.15E-05	6.40E-04	9.58E-04	2.41E+00	-1.18E-04
	GWP-GHG	kg of CO2-eq.	5.55E+00	8.84E-03	8.77E-02	1.04E-01	2.10E+00	-1.28E-02

Product	Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PBMR25	GWP-total	kg of CO2-eq.	-2.15E+01	1.20E-02	1.20E-01	1.42E-01	4.04E+00	-1.77E-02
	GWP-biogenic	kg of CO2-eq.	-2.87E+01	-1.57E-05	8.71E-04	1.30E-03	3.03E+00	-1.63E-04
	GWP-GHG	kg of CO2-eq.	7.26E+00	1.20E-02	1.19E-01	1.42E-01	2.90E+00	-1.77E-02

Product	Abbreviation	Unit	A1-A3	C1	C2	C3	C4	D
PBMR30	GWP-total	kg of CO2-eq.	-2.60E+01	1.43E-02	1.43E-01	1.69E-01	4.68E+00	-2.12E-02
	GWP-biogenic	kg of CO2-eq.	-3.42E+01	-1.87E-05	1.04E-03	1.55E-03	3.47E+00	-1.95E-04
	GWP-GHG	kg of CO2-eq.	8.31E+00	1.43E-02	1.42E-01	1.69E-01	3.47E+00	-2.12E-02

Material Circularity Indicators (MCI's)

As part of the development of this EPD, thinkstep-anz were commissioned to calculate Material Circularity Indicators (MCIs) for the products in this EPD.

The MCI, developed by the Ellen MacArthur Foundation, has been used to measure the degree to which a product system keeps materials in circulation at their highest form of value. The MCI provides the means to draw together all of the different ways in which circularity can be delivered (e.g. reuse, recycling, bio-materials) and reflects these as a simple score between 0 and 1. The value 0.1 reflects a typical linear system and 1 reflects a perfectly circular system. A value below 0.1 reflects a product with a utility worse than that of an industry average product (i.e. has a shorter lifetime or a lower use intensity). The methodology is implemented in LCA for Experts and results in a dimensionless number between 0 and 1.

Table 85: MCI Score

Product	MCI score
PBS9	0.55
PBS12	0.55
PBS16	0.54
PBS18	0.54
PBS25	0.55
PBS30	0.55
PBMR9	0.55
PBMR12	0.54
PBMR16	0.53
PBMR18	0.53
PBMR25	0.54
PBMR30	0.53

Additional environmental information

- Laminex® Hamilton manufacture low pressure laminate to AS/NZS 1859.3 and carries out testing in accordance with AS/NZS 4266.2
- Laminex® Hamilton is ISO14001 certified
- Laminex® Hamilton is FSC (FSC-C102329) and PEFC certified
- All Melteca® and Whiteboard pressed to an MDF substrate is FSC certified
- All Laminex® Hamilton products are Eco Choice Aotearoa certified
- All Laminex® Hamilton products are NZ Made registered.

References

EPD International (2019). General Programme Instructions for the International EPD System version 4.0, dated 2021-03-29. www.environdec.com

PCR 2019:14 Construction Products, version 1.3.1
Construction Products of 2023-07-08

EN 15804:2012+A1:2013; Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products . Brussels: European Committee for Standardization.

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ISO 14040:2006; Environmental management – Life cycle assessment – Principles and framework. Geneva: International Organization for Standardization.

ISO 14044:2006; Environmental management – Life cycle assessment – Requirements and guidelines. Geneva: International Organization for Standardization.

ISO 14025:2006; Environmental labels and declarations – Type III environmental declarations – Principles and procedures. Geneva: International Organization for Standardization.

Sphera (2022). LCA for Experts life cycle inventory documentation. Leinfelden-Echterdingen, Germany: thinkstep AG. URL: <https://sphera.com/product-sustainability-gabi-data-search/>

General information

An Environmental Product Declaration, or EPD, is a standardised and verified way of quantifying the environmental impacts of a product based on a consistent set of rules known as a PCR (Product Category Rules).

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable.

EPDs of construction products may not be comparable if they do not comply with EN 15804.

The results for EN15804+A1 compliant EPDs are not comparable with EN15804+A2 compliant studies as the methodologies are different. Results that are A1 compliant are given in an annex to this document to assist comparability across EPDs.

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.

Declaration owner:		Laminex® New Zealand	
	Web	www.laminex.co.nz	
	Email	csc@laminex.co.nz	
	Post	Laminex NZ, 810 Great South Road, Penrose, Auckland 1061, New Zealand	
Geographical scope:		NZ	
Reference Year for Data		01-07-2020 to 30-06-2021	
EPD programme operator:		EPD Australasia Limited	
	Web	www.epd-australasia.com	
	Email	info@epd-australasia.com	
	Post	EPD Australasia Limited, 315a Hardy Street, Nelson 7010, New Zealand	
Product category rules (PCR):			
CEN standard EN 15804 served as the core Product Category Rules (PCR)			
Product Category Rules (PCR)		PCR 2019.14 Construction Products, version 1.3.1	
PCR review was conducted by		The Technical Committee of the International EPD® System. See www.environdec.com for a list of members.	
Review chair		No chair appointed	
Life cycle assessment (LCA):		thinkstep Ltd	
LCA accountability			
	Web	www.thinkstep-anz.com	
	Email	anz@thinkstep-anz.com	
	Post	11 Rawhiti Road, Pukerua Bay, Wellington 5026, New Zealand	
Third-party verification			
Independent verification of the declaration and data, according to ISO:14025:2006 via		<input checked="" type="checkbox"/> EPD verification by individual verifier	
	Contact	Andrew D. Moore, Life Cycle Logic Pty. Ltd.	
	Web	www.lifecyclelogic.com.au	
	Email	andrew@lifecyclelogic.com.au	
	Post	PO Box 571 Fremantle 6959 Western Australia, Australia	
Verifier approved by		EPD Australasia	
Procedure for follow-up of data during EPD validity involved third-party verifier		<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
Version		Date and Description	
1		January 2024 – Original EPD release	
1.1		March 2024 – Updated EPD logo and the percentage of specific data	

Note: 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 epd-australasia.com



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